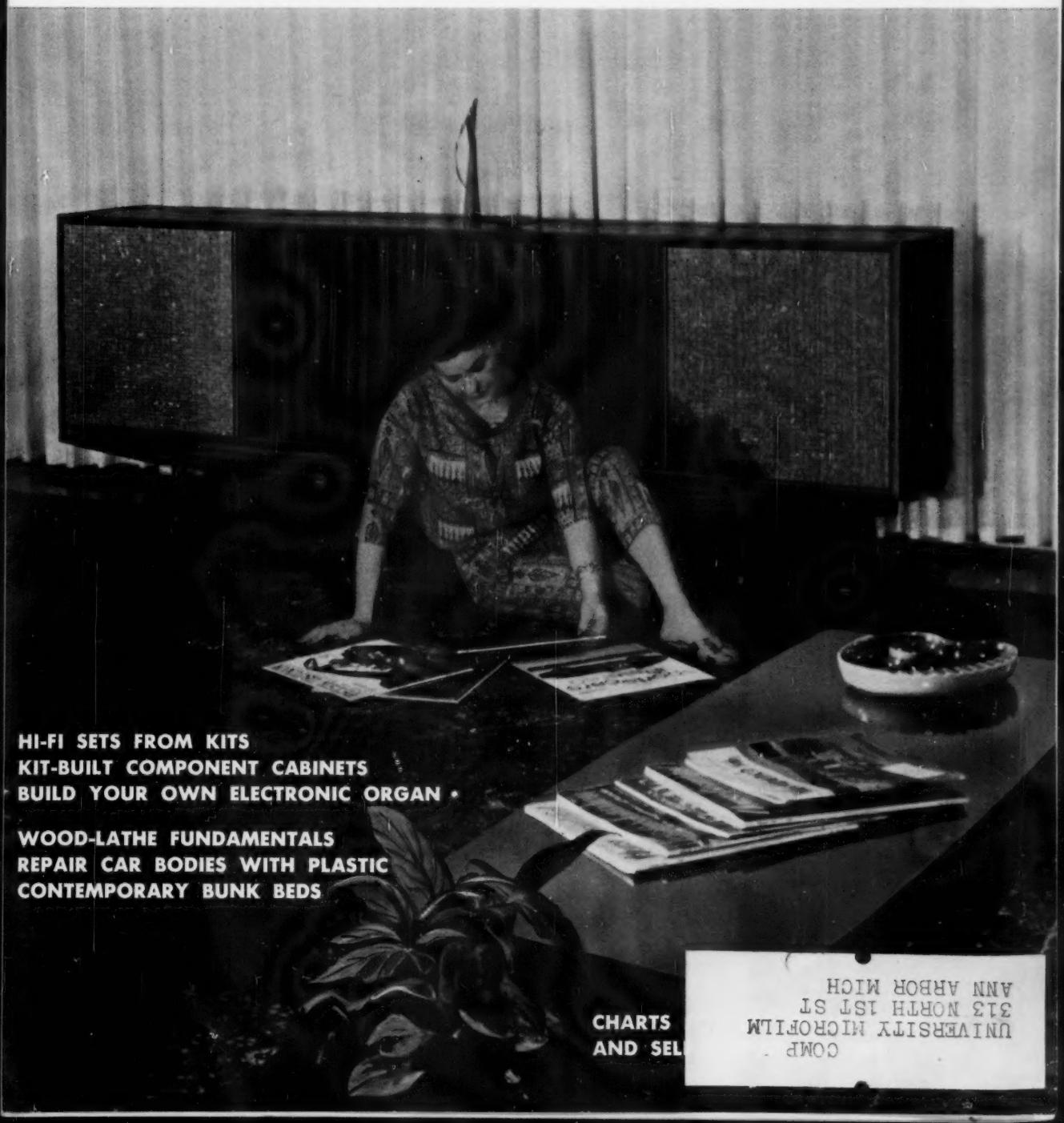
# Workbench

MAY
JUNE
1960

35c
CDC

**PORTABLE JIG SAWS and SANDERS**



**HI-FI SETS FROM KITS**
**KIT-BUILT COMPONENT CABINETS**
**BUILD YOUR OWN ELECTRONIC ORGAN**

**WOOD-LATHE FUNDAMENTALS**
**REPAIR CAR BODIES WITH PLASTIC**
**CONTEMPORARY BUNK BEDS**

**CHARTS**
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ONLY **$4.95**

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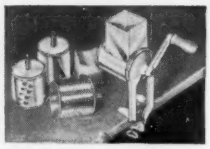
Lowest prices in U. S. of wonderful, brand new, factory fresh, latest models Men's and Women's Electric Shavers. In unopened factory cartons. COMPLETE! Nothing left out—all attachments included. We unqualifiedly GUARANTEE you will be delighted, or purchase price cheerfully refunded. We have over one million satisfied customers. We'll please you, too! Order at these low prices.

| MEN'S MODELS | Others Charge | Our Price |
|---|---|---|
| Ronson—C. F. L. | $20.00 | $11.85 |
| Norelco—Speedshaver | 24.95 | 14.50 |
| Sunbeam Rollmaster | 24.95 | 16.40 |
| Remington Roll-A-Matic | 29.95 | 17.85 |
| Remington Auto & Home | 31.95 | 19.85 |
| **LADIES' MODELS** | **Others Charge** | **Our Price** |
| Lady Sunbeam | $12.95 | $ 8.85 |
| Lady Ronson | 16.50 | 9.75 |
| Norelco-Coquette | 17.50 | 9.85 |
| Remington-Princess | 17.50 | 10.35 |

We mail orders within 10 hours, or less, except in unusual circumstances. EXTRA! FREE! If you send this ad with your order, we'll send you a wonderful FREE gift—a knife that looks like a key!

## FREE! FREE!

### SALAD MAKER & FOOD GRINDER



*EXTRA! FREE!*

We will send you the wonderful Salad Maker & Food Grinder pictured—if you order only $7.98 or more of merchandise from this ad. This is an L & M EXTRA FREE gift. Complete with three cutters. This wonderful machine Shreds, Chops, Peels, Slices, Grates, Waffles, Crumbs, etc., etc. (Please send 35¢ extra for pstg. & hdlg.) **SAVE THIS AD!**

## GIANT PLASTIC SHEET 1¢ ea.

9'x12' (108 Sq. Ft.)

Others charge $1.00 or more for huge 9x12 ft. (108 sq. ft.) tough, durable, transparent plastic sheet, but our price is only One Cent each, when you buy another sheet for 99c. You get TWO 9x12 ft. sheets for $1.00! First quality not seconds or throw-outs! Protects rugs, furniture and floors when painting. Perfect cover for cars, boats, buggy, appliances, bicycles, lawn furniture, etc. Make into aprons, tablecloths, lamp shades, appliance covers, etc. Water-proof, greaseproof, dirtproof, clean with damp cloth. Each cover is one piece. No seams. You pay Only $1.00 for TWO 9x12 ft. plastic sheets (plus 10c for pstg.), or *$1.10 in all.*

## AMAZING NEW PAINT SPRAYER Only $7.95

Save $10.00! Sprays paint, varnish, enamel, shellac, etc. Full 25-oz. capacity. Does the equivalent of 50 lbs. pressure. Plug into any 115 volt, 60 cycle circuit. Cord included. Fully guaranteed. Save at low sale price. Only $7.95.

## YOUR NAME & ADDRESS GLOW in the DARK on COACH & FOUR SIGN! 79c

Amazing, new midnight black COACH & FOUR SIGN at lowest price on which your name and house number GLOW IN THE DARK—without electric lights or other attachments—lowest price in U.S.! Friendly, attractive sign reflects your friendship and warm feeling for friends, neighbors, etc. Enhances value of your property. Easy to install. Almost 16" long, 5¾" high. Only 79c plus 21c postage and handling, or $1 ea.—or 3 for only $2.50!

## AUTOMATIC NEEDLE THREADER 59¢ ea.

This amazing Two-Hole Automatic Needle Threader threads any style or size needles instantly. No eye straining. No frantic stabbing back and forth—just drop end of thread into groove, push button and needle is threaded! Sturdy, durable. Not to be confused with single-hole needle threaders. Order NOW! Others charge $1.00 each for one-hole needle threaders. Our price—only 59c each, or 2 for only $1.00!

## World's Smallest ADDING MACHINE

**Adds, Subtracts, Multiplies and Divides up to ONE BILLION!**

**Only $1.89**

Precision-made by master craftsmen. Enduring, high-quality steel mechanism, not tin or plastic like others. Adds, subtracts, multiplies, divides—up to 1,000,000,000! Never makes a mistake. Save money, avoid errors, wherever, whenever you shop. Works with lightning speed with same precision as machine costing hundreds of dollars!

We GUARANTEE our adding machine is finest value for the money. Only $1.89 in all!

## AUTOMATIC ELECTRIC COFFEE MAKER

**15-CUP CAPACITY** **$8.95**

Latest model — in factory-sealed carton. Brews up to 15 cups of perfect coffee automatically. Plug in, set strength preferred—mild, medium or strong—and forget it. Stops automatically when done. Stays piping hot for hours—ready to serve anytime. Life-time body of high polish aluminum finish! Dripless spout . . . stays clean. Heavy-duty Thermostat. Heat resistant handle. Two heating elements complete with cord set. $19.49 value only $8.95 plus $1.00 for pstg. and hdlg. or $9.95.

EXTRA! SPECIAL! Wonderful new 40-cup size Automatic Electric Coffee Maker only $19.95!

## 200—6 FT. LONG BALLOONS 89¢

Twist into thousands of shapes such as Dinosaurs, dogs, elephants, cats, zebras, tigers, lions, etc. Others charge 25c each for smaller balloons but we buy in huge quantities so our price is only 200 for 89c plus 11c for postage and handling or **$1.00 in all.**

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SENSATIONAL! World's greatest thread value — bar none! 100 spools of wonderful mercerized thread. In every color imaginable—16 shades of blue alone! Now you can match ANY color under the sun! Perfect for mending, darning, sewing, patching. 100 spools for 88c plus 12c for postage and handling or **$1.00 in all!**

## 16 RETRACTABLE BALL PENS $1.00

**100 for $6.25—Refills 32 for 98¢!**

Guaranteed to write as well as $1.00 pens. Push button, pen writes. Push again, pen retracts. Your choice of black, red, blue or green ink. 16 pens only $1.00. REFILLS—same choice of ink colors, 32 for $1.00. 175 Refills for $4.98.

## LARGE FAMILY-SIZE 10-WAY ELECTRIC COOKER

Only **$6.75**

World's most amazing and lowest price, unconditionally guaranteed appliance that automatically Roasts, Fries, Stews, Cooks, Warms, Casseroles, Blanches, Steams, etc. Just set dial—that's ALL. Powerful Thermostat takes care of everything! Big 6-qt. size. Comparable to those advertised at $39.95—our price $6.75 plus $1.00 postage or $7.75 in all! FREE FIREKING ovenglass cover. Also FREE—big cook book.

## 20 FAMOUS BRAND ZIPPERS 88¢

Nationally advertised. Includes Talon, Waldes, Conmar, Segal-lock, etc. We send 20 Zippers carefully selected, guaranteed to please in these sizes: 5, 6, 7, 8, 9, 10, 11, 12, 14. All for 88c plus 12c pstg. & hdlg. or **$1.00 in all.**

## 50 Yds. NEW LACE 88¢

In enchanting patterns and designs. Vals, edges, insertions, etc. in beautiful colors and full widths. For women's, girls' and babies' dresses, pillow slips, decorative edgings on many articles, etc. Pieces up to 10 yds. in length. NO small pieces, 50 yds. only 88c plus 12c or **$1.00 in all!** FREE with order—100 Assorted Buttons.

## NEW PINKING SHEARS ONLY 79¢ Pair

We guarantee our Pinking Shears are as good or better than those you pay $5.00 or more for. They cut and pink ANY material at the same time, with smooth cutting action. Leave neat notched edge. All metal—no plastic. Only 79c plus 31c for pstg. & hdlg., or $1.10 in all!

## MAKE ADDITIONAL TREMENDOUS SAVINGS BY BUYING AT THESE EXCEPTIONALLY LOW AGENTS' PRICES!

When you purchase from us at quantity prices, you make tremendous savings. Buy now for the needs of your own family, relatives, neighbors, etc., or for resale purposes as many of our agents do. But DON'T DELAY, as prices are subject to change without notice.

| | Lots of 3 | Lots of 6 | Lots of 12 | Lots of 3 Doz. |
|---|---|---|---|---|
| Sewing Machine | $ 5.25 | $ 9.95 | $ 17.75 | $ 45.00 |
| Plastic Sheet | 1.50 | 2.70 | 5.00 | 14.40 |
| Adding Machine | 5.25 | 9.95 | 18.00 | 48.60 |
| Paint Sprayer | 21.25 | 42.00 | 81.00 | 216.00 |
| Coach & Four | 2.25 | 4.20 | 7.20 | 19.80 |
| Needle Threader | .... | .... | 5.50 | 13.95 |
| Coffee Maker (15-cup) | .... | 55.00 | 101.50 | 288.00 |
| Coffee Maker (40-cup) | .... | 114.00 | 222.00 | 648.00 |
| 200 Balloons | 2.70 | 5.00 | 9.00 | 25.20 |
| Cooker | .... | 45.00 | 81.00 | .... |
| Zippers | 2.70 | 5.00 | 9.00 | 25.20 |
| Lace | 2.70 | 5.00 | 9.00 | 25.20 |
| Pinking Shears | .... | 5.75 | 9.60 | 27.00 |

Electric Shavers—Price of One Shaver shown at top of this ad. In lots of 6 or more, deduct 75c for **each** Shaver you buy.

All prices F.O.B. St. Louis. C.O.D. orders accepted if you send 25% of purchase with order.

**L & M COMPANY • Dept. WE-22, Box 881, St. Louis, Mo.**

## FREE!

We'll give an extra free gift worth $1.00 with each order for $3.00 or more! MINIMUM ORDER accepted $1.00. PLEASE include 25c for packing & hdlg. for EACH order regardless of size.

## MONEY-BACK GUARANTEE COUPON

**L & M Co., Dept. WE-22, Box 881, St. Louis, Mo.**

Please send my order FAST! You guarantee to please or I get my money back when I return merchandise. I enclose $.....

Send my order C.O.D. I enclose 25% or $..... I will pay postman balance of cost plus postage fee when my package arrives.

| QUANTITY | ARTICLE | PRICE |
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*Send additional order on separate sheet of paper.

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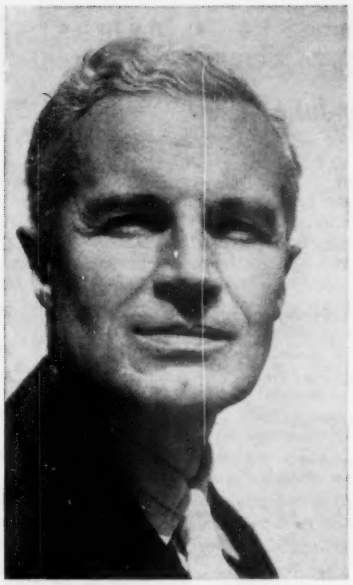
*DON'T FORGET MY FREE GIFTS!*



# I'd like to give this to my fellow men...

## *while I am still able to help!*

**I was young once, as you may be—today I am older. Not too old to enjoy the fruits of my work, but older in the sense of being wiser. And once I was poor, desperately poor. Today almost any man can stretch his income to make ends meet. Today, there are few who hunger for bread and shelter. But in my youth I knew the pinch of poverty; the emptiness of hunger; the cold stare of the creditor who would not take excuses for money. Today, all that is past. And behind my city house, my summer home, my Cadillacs, my Winter-long vacations and my sense of independence—behind all the wealth of cash and deep inner satisfaction that I enjoy—there is one simple secret. It is this secret that I would like to impart to you. If you are satisfied with a humdrum life of service to another master, turn this page now—read no more. If you are interested in a fuller life, free from bosses, free from worries, free from fears, read further. This message may be meant for you.**

**By Victor B. Mason**

I am printing my message in a magazine. It may come to the attention of thousands of eyes. But of all those thousands, only a few will have the vision to understand. Many may read; but of a thousand only you may have the intuition, the sensitivity, to understand that what I am writing may be intended for you—may be the tide that shapes your destiny, which, taken at the crest, carries you to levels of independence beyond the dreams of avarice.

Don't misunderstand me. There is no mysticism in this. I am not speaking of occult things; of innumerable laws of nature that will sweep you to success without effort on your part. That sort of talk is *rubbish!* And anyone who tries to tell you that you can *think* your way to riches without effort is a false friend. I am too much of a realist for that. And I hope you are.

I hope you are the kind of man—if you have read this far—who knows that anything worthwhile has to be *earned!* I hope you have learned that there is no reward without effort. If you have learned this, then you may be ready to take the next step in the development of your karma—you may be ready to learn and use the secret I have to impart.

### I Have All The Money I Need

In my own life I have gone beyond the need of money. I have it. I have gone beyond the need of gain. I have two businesses that pay me an income well above any amount I have need for. And, in addition, I have the satisfaction—the deep satisfaction—of knowing that I have put more than three hundred other men in businesses of their own. Since I have no need for money, the greatest satisfaction I get from life, is sharing my secret of personal independence with others—seeing them achieve the same heights of happiness that have come into my own life.

Please don't misunderstand this statement. I am not a philanthropist. I believe that charity is something that no proud man will accept. I have never seen a man who was worth his salt who would accept something for nothing. I have never met a highly successful man whom the world respected who did not sacrifice something to gain his position. And, unless you are willing to make at least half the effort, I'm not interested in giving you a "leg up" to the achievement of your goal. Frankly, I'm going to charge you something for the secret I give you. Not a lot—but enough to make me believe that you are a little above the fellows who merely "wish" for success and are not willing to sacrifice something to get it.

### A Fascinating and Peculiar Business

I have a business that is peculiar—one of my businesses. The unusual thing about it is that it is needed in every little community throughout this country. But it is a business that will never be invaded by the "big fellows". It has to be handled on a local basis. No giant octopus can ever gobble up the whole thing. No big combine is ever going to destroy it. It is essentially a "one man" business that can be operated without outside help. It is a business that is good summer and winter. It is a business that is growing each year. And, it is a business that can be started on an investment so small that it is within the reach of anyone who has a television set. But it has nothing to do with television.

This business has another peculiarity. It can be started at home in spare time. No risk to present job. No risk to present income. And no need to let anyone else know you are "on your own". It can be run as a spare time business for extra money. Or, as it grows to the point where it is paying more than your present salary, it can be expanded into a full time business—overnight. It can give you a sense of personal independence that will free you forever from the fear of lay-off, loss of job, depressions, or economic reverses.

### Are You Mechanically Inclined?

While the operation of this business is partly automatic, it won't run itself. If you are to use it as a stepping stone to independence, you must be able to work with your hands, use such tools as hammer and screw driver, and enjoy getting into a pair of blue jeans and rolling up your sleeves. But two hours a day of manual work will keep your "factory" running 24 hours turning out a product that has a steady and ready sale in every community. A half dollar spent for raw materials can bring you six dollars in cash—six times a day.

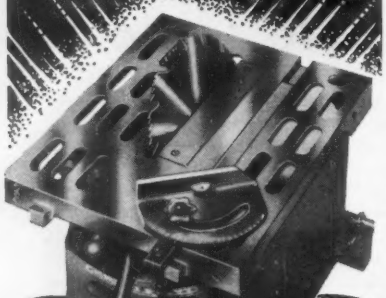
In this message I'm not going to try to tell you the entire story. There is not enough space on this page. And, I am not going to ask you to spend a penny now to learn the secret. I'll send you all the information, free. If you are interested in becoming independent, in becoming your own boss, in knowing the sweet fruits of success as I know them, send me your name. That's all. Just your name. I won't ask you for a penny. I'll send you all the information about one of the most fascinating businesses you can imagine. With these facts, you will make your own investigation. You will check up on conditions in your neighborhood. You will weigh and analyze the whole proposition. Then, and then only, if you decide to take the next step, I'll allow you to invest $15.00. And even then, if you decide that your fifteen dollars has been badly invested I'll return it to you. Don't hesitate to send your name. I have no salesmen. I will merely write you a long letter and send you complete facts about the business I have found to be so successful. After that, you make the decisions.

### Does Happiness Hang on Your Decision?

Don't put this off. It may be a coincidence that you are reading these words right now. Or, it may be a matter that is more deeply connected with your destiny than either of us can say. There is only one thing certain: If you have read this far you are interested in the kind of independence I enjoy. And if that is true, then you must take the next step. No coupon on this advertisement. If you don't think enough of your future happiness and prosperity to write your name on a postcard and mail it to me, forget the whole thing. But if you think there is a destiny that shapes men's lives, send your name now. What I send you may convince you of the truth of this proverb. And what I send you will not cost a penny, now or at any other time.

**VICTOR B. MASON**
**1512 Jarvis Ave., Suite M-6-E**
**CHICAGO 26, ILLINOIS**

# NEW MODEL CHANGEOVER SALE!



NOW $9.95 WAS $24.95

Shipped Complete As Shown Less Blade

MODEL 590

## 8" TILT ARBOR POWER SAW

**1959 MODEL NOW SOLD BELOW COST**

***Blade Tilts • Table Remains Level***

Heavy duty all cast iron and steel construction. Precision ground cast iron table. Price includes massive cast iron mitre gauge and patented motor drive that fits any motor. Does everything same as saws costing four times as much — cross cuts, rips, bevels, mitres, dadoes, cuts compound angles. Adjustable depth of cut; 0" to 2¼". Send check or M.O. $2.00 deposits on C.O.D.'s.

**SAVE $15 ON THIS SPECIAL BARGAIN DURING OUR MODEL CHANGEOVER**

This saw is our 1959 model. Brand new — sent to you in factory sealed cartons. Sold and guaranteed direct from factory to you at a fantastic bargain.

**LOOK AT ALL THESE SPECIAL FEATURES**

Blade adjusts to any angle up to 50° • Single Hand Wheel Control. Tilts and locks blade with a twist of the wrist • Blade raises and lowers; cuts from 0 to 2¼ • Precision-ground cast iron table. Lasts a lifetime. Resists nicking and wear • Patented Motor Mount takes any standard ¼ or ⅓ h.p. motor • Always keeps belt tight; transmits full power • Massive accurate iron mitre gauge • Saw insert removable for dado heads and other accessories • Heavy long-lasting, all-metal construction • Built for a lifetime • Shipping weight 25 lbs.

**FAMOUS AMERICAN IRON CLAD GUARANTEE**

Try this famous saw 10 days. If not completely delighted — FOR ANY REASON — return for immediate money back refund. All power tools sent express collect. We reserve the right to refund money if stock is exhausted. Use this handy coupon.

**AMERICAN MACHINE & TOOL CO.**
ROYERSFORD 56, PA.

**MAIL COUPON TODAY**

**American Machine & Tool Co.**
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Gentlemen: Please send me ..... 8" Tilt Arbor Saw(s) at $9.95 each. Enclosed is check ☐, M.O. ☐, or send C.O.D. ☐ . . . $2.00 deposit, please.

Name .....

Address .....

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# WORKBENCH volume 16 • number 3


## Contents for May-June, 1960

**COVER:** Sieler Design Stereo Block
Photo by Fred Stebbins

**ARTICLES**


Build-It-Yourself Hi-Fi Furniture ..... 8
Build-Your-Own Electronic Organ ..... 10
Short-Wave Radio Kit ..... 15
Hi-Fi Sets From Low-Cost Kits ..... 16
Companion Magazine Racks ..... 19
Contemporary Bunk Beds ..... 20
Study-Storage Wall ..... 22
Herb Shannon
Table-Chest Sewing Center ..... 25
Webster P. Taylor
Multi-use Candlestand ..... 26
Roberta L. Fairall
Portable Jig Saws and Sanders ..... 28
Band Saw Signal ..... 31
Robert R. Clark
Auto-Body Repair With "Glass" ..... 32
Warner Benson
Wood-Lathe Fundamentals ..... 34
Fred Stebbins
Lazy Susan Space Saver ..... 41
Building "Frolic" Part II ..... 42
Scott Morgan
Improvised Wire Terminals ..... 47
Chas. H. Willey
Reviving A Drowned Outboard ..... 48
Scott Morgan
Hi-Fi Glossary ..... 50
Home Paint Sprayers ..... 52
Self-Contained Fountains ..... 57
It's For The Birds! ..... 60
James Hyek
Crosley Engine Powers Miniature Utility Car ..... 61
In the Next Issue ..... 51


**DEPARTMENTS**


Letters To The Editor ..... 3
Keeping Up With Craft and Home Products ..... 4
Book Reviews ..... 14
WORKBENCH Research Department ..... 54
WORKBENCH Shop Tips ..... 62



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# LETTERS TO THE EDITOR

Dear Mr. Editor:
Am interested in wood carving and note that you had a memo on it in "Letters to the Editor." Have just finished carving an oxen and ox cart and am looking for some practical projects. Do most of my work with an "Exacto" knife, but also have a set of carving knives. Wood carving is fascinating and can be done while you are sitting and relaxing.
R. Hawthorne, Newark, Del.

*Dear Mr. Hawthorne:*
*We have received a number of letters asking for more information on wood carving. We are looking for someone to do a competent, complete article on wood carving and will feature it in a future issue of* WORKBENCH.

Dear Sir:
I made a "hutch" from an old radio cabinet. The sides were cut with a Black and Decker saber saw and the top was run through a Shopsmith saw. The back and bottom are hardwood-faced plywood. The edges of the sides and the shelves are covered with Weldwood veneer strips to hide the edge grain. It is stained with walnut, then given a light coat of varnish. This was rubbed down with pumice and oil, then waxed.
Harry Turville, San Diego, Calif.

*Dear Mr. Turville:*
*Your idea is clever and the workmanship excellent. We are always happy to see snapshots of ideas dreamed up and built by our readers.*

Dear Mr. LeGrande:
Having just lately arrived at the age (75 yrs.) of forced retirement, I thought you might be interested in some of the projects I have made through the years.
R. A. Hill, Detroit, Mich.

*Dear Mr. Hill:*
*Of the many photographs of projects you sent, we have room for just one, the machinist's toolbox you say you have used since 1934. If enough readers are interested, Mr. Hill has offered to send us plans so that we can publish them. If more of you young readers have ideas, or clear photos of projects you have made, send them along.*

Dear Mr. Hedden:
This is in reference to the article "Drill-Bit Maintenance" in the Jan.-Feb. issue. The table of drilling speeds for various materials to be drilled should be a handy reference for many "WORKBENCHERS," but you did not show how to convert drill speed in r.p.m. The following is a suggested addition:

$$\text{RPM} = 4 \times \frac{\text{cutting speed (ft./min.)}}{\text{dia. of drill (in.)}}$$

The 4 is approximate (actually 3.82) but accurate enough for shop use.
The recent improvement in WORKBENCH is appreciated.
Kenneth D. Peters, Navesink, N. J.

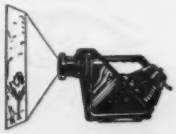
*Thanks, Ken, for the formula. Any time any of you fellows have additional information for one of our articles, send it along. If it is usable, we will print it in this column.*

Jay W. Hedden

Jay W. Hedden, Editor


**Patented, UL Approved, Made in U.S.A.**

**PROJECTS PICTURES IN FULL COLOR UP TO FOUR FEET WIDE**



**No Films or Negatives Required! Adjustable Twin Lens Enlarges ANYTHING Illustrated or Printed — Photos, Clippings, Fine Print, Coins, Stamps, Maps, even Tiny Insects and Butterflies — Against Any Flat White Screen or Surface!** It's fun! It's Educational! The amazing Magnajector will provide endless hours of entertainment. Any picture—any comparative flat object—placed under the 3⅞x3" opening at the base of the Magnajector will be projected clearly and enlarged up to 4 ft. wide, in full color or black-and-white. Measures 12"x8"x4½". Has easy turn on and off switch. Precision made, polished Twin Lens is easily adjusted to bring subject into sharp focus. The Magnajector requires no blowers, no fans, no motor, no complicated adjustments.

**FREE! Handy Luggage-Type Carrying Case—Only** ..... **$7.95 ppd.**

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**An Amazing, Versatile Revolutionary LEVEL & INCLINE MEASURE!**

This simple, yet amazingly accurate instrument indicates level and measures incline down to a fraction of an inch. Makes bubble type or string levels obsolete. It not only indicates level, but shows exactly how much correction is needed. Just one person using the split-image transit and target supplied with it can perform any leveling, incline-measuring job **quickly, easily, accurately** — measures inclines down to the thinness of a dime at 25 ft. So accurate, it can be used instead of expensive surveying equipment for most grading and construction work. Ppd. ..... **$6.95**

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1/16" dia., 100 lb. test, per ft. ..... 1½c
1/8" dia., 375 lb. test, per ft. ..... 2c
3/16" dia., 500 lb. test, per ft. ..... 2½c
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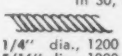
**NYLON BRAIDED LINE**

1/4" dia., 1000 lb. test, olive drab, per ft. ..... 3c
In 30, 40, 50, and 75 ft. lengths



**NYLON ROPE**

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3/8" dia., 2700 lb. test, per ft. ..... 17c
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All in any length up to 1200 feet

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Perfect for passenger safety belts, luggage straps, car towlines, car carrying straps, boat trailer straps, etc. Tie heavy equipment and machinery with greater ease and safety . . . at far less cost. Just the thing for the garage or workshop.

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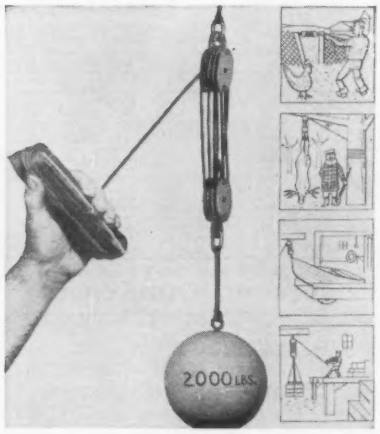
If C.O.D. fees extra. Money-back Guarantee.
**SCOTT-MITCHELL HOUSE, Inc.**
**Dept. W-5, 415 S. Broadway, Yonkers, N.Y.**

# keeping up with craft and home products

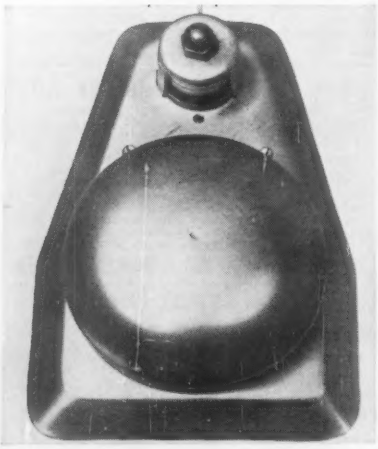
In communicating with companies whose products are described in this department, please mention WORKBENCH.

## Portable Block and Tackle



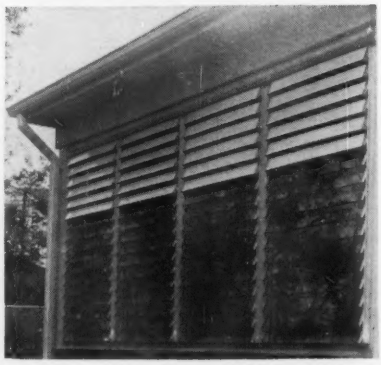

WEIGHING ONLY 13 oz. this midget block and tackle will handle up to 1,000 lb. Ideal to carry in car for emergency, loading heavy objects around home, etc. Carrying bag, 60 ft. of nylon cord included for $9.95. Larger size lifts 2,000 lb., cost $12.95. Scott Mitchel House, Inc., 415 S. Broadway, Yonkers, N. Y.

## Spring-Powered Fire Alarm



COIL THERMOSTAT rings loud alarm when temperature reaches approximately 130 deg. in vicinity of this fire alarm powered by hand-wound spring. Scots Guard, $9.95, Crusader Sales, P. O. Box 1191, Bristol, Conn.

## Aluminum Jalousie Panels Substitute for Awnings



CLIPPED TO jalousie panes, these metal panels keep out hot sun, permit weathertight closing of windows. Jal-A-Shades, Convertible Clip Corp., 301 Park Ave., Falls Church, Va.

## Pocket-Size Tape Recorder

FLASHLIGHT DRY cells power this portable tape recorder weighing just 5 lbs., measures 3 x 7 x 11 in. Tiny microphone picks up sound as far as 25 ft. Mfd. by Grundig in West Germany. Available from North American Industries, Dept. GP 57, 101 West 31st St., N. Y. 1, N. Y.

## Free Magnifier Literature

SIX-PAGE folder showing 20 uses for head-worn magnifier available free on request also describes various models, magnifying powers and focal lengths. One of uses shown might apply to your job or hobby. Edroy Products Co., 480 Lexington Ave., New York 17, N. Y.

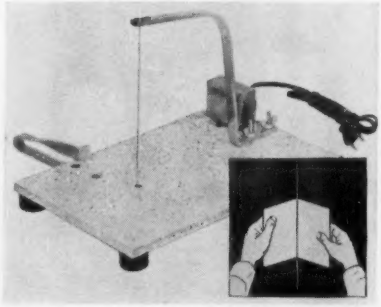
## Round-File Surform Tool

SHAPED LIKE a round file, this tool is another in family of Stanley Surform tools. Tool is ⅜ in. dia., cuts wood, aluminum, plastics, asphalt tile, etc. $2.29 from Stanley Tools, Dept. PD, 111 Elm St., New Britain, Conn.

## Lightweight Spirit Level

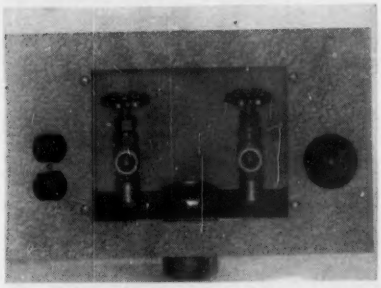
WEIGHING JUST 8 oz. the "Little Ull'" level is 10 in. long, has two unbreakable-plastic spirit vials. Can be held with one hand and read easily. $4.00 from Kunzes, 728 W. 45th St., Kansas City 11, Mo.

## Versatile Cutter-Bender For Plastic Tile



HEATED WIRE of this tool cuts holes, notches, irregular lines. Also makes single or multiple bends of any angle. Tilematic, Vido Products, Inc., Marion St., Grand Haven, Mich.

## Laundry Room Space Saver

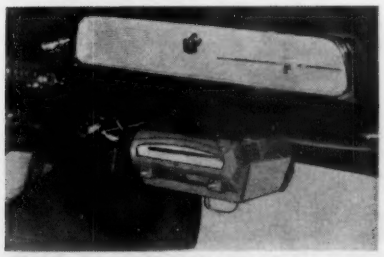


EXTRA 6 IN. is provided in laundry or utility room by this recessed fixture that contains hot and cold water valves and drain. Available with and without electric outlets. For information write: Dick-Gray Mfg. Co., Inc., P. O. Box 392, Paducah, Ky.

## Holes "Dug" With Hammer

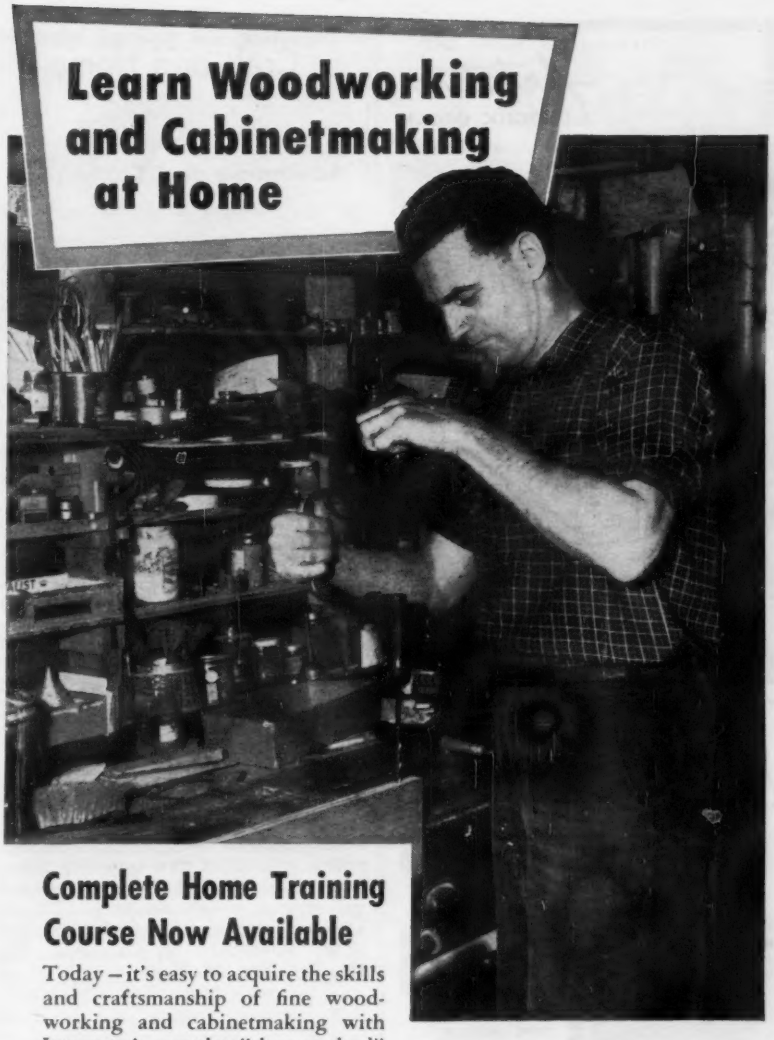
THIS TOOL uses inertia hammer to force its point into ground. Can be used for planting bulbs, small trees, setting garden stakes, fence posts. $12 from Impact Tool Co., 102 Girdle Rd., East Aurora, N. Y.

## Record Player for Car



THREE WIRES hook this record player to the radio and speaker of your car, permits playing 45 R.P.M. records on rough roads and smooth. $89.50 from J. L. Bagarry, Jr., Dept. 84-19, 2755 Liberty, Beaumont, Texas.


# Learn Woodworking and Cabinetmaking at Home



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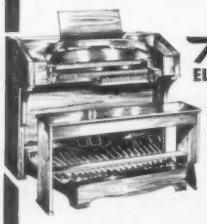

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# Craft and Home Products

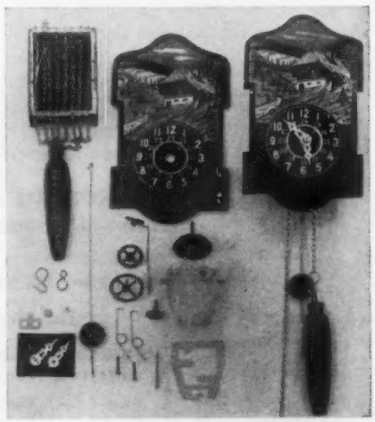
## Sawhorse and Table Legs

FOLDING LEGS clamp to any 2 x 4 or 2 x 6 to make knockdown sawhorse or table. 24-in. legs $4.98 pr., 30-in. legs (with extensions) $6.98 pr. Add 75 cents shipping charge. From Trojan Products Corp., 1131 East 25th St., Dept. "Y," Indianapolis 5, Ind.

## Self-Coiling Dog Leash

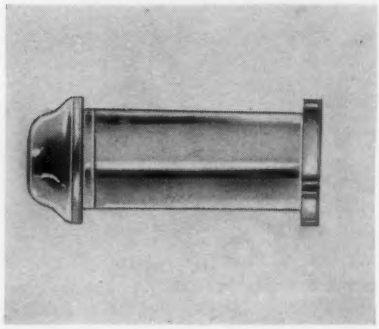
SAME PRINCIPLE as coiled cord on telephone is used for new-type dog leash, so it can be put in your pocket, yet stretch to almost 6 ft. Will not kink or trail on ground. In 8 colors, $2.98, Phon-O-Leash Co., P.O. Box 331, Flushing 52, N.Y.

## Pendulum-Clock Kit



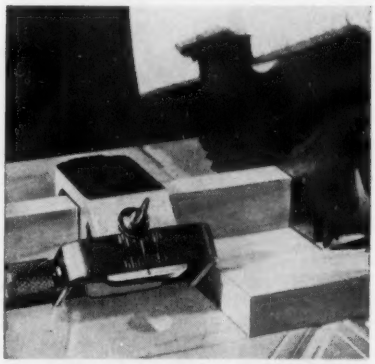
FUN TO ASSEMBLE, this clock kit then becomes an accurate timepiece and unique wall decoration. At $3.95, it is an ideal, low-cost gift for the youngster who is mechanically inclined. T & J Eischen, 3659 D South Damen Ave., Chicago 9, Ill.

## One-Way Door Viewer



WIDE-ANGLE LENS in this viewer permits seeing someone outside, without them seeing you. Requires only ½-in. hole through door, installed easily. From Remington Hardware Co., 102 Greenwich St., N. Y. 6, N. Y., $1.00.

## Stop Gauge for Power Saws



CUT IDENTICAL lengths of stock with no trouble when this stop gauge is clamped to fence of table or radial-arm saw. Knurled knob permits fractional adjustments either way. 10-day free trial with money-back guarantee, $5.95 from L. Stahl, 3166 Wadsworth, Saginaw, Mich.

## Child's TV-Car Seat

SAFETY SEAT for youngsters locks to car seat with "tension bar lock," belt holds them securely, prevents them being hurled into windshield on sudden stops. Seat easily removed for TV viewing, picnicking, etc. DaVee Seat, Elstan Co., Waterloo, Iowa.

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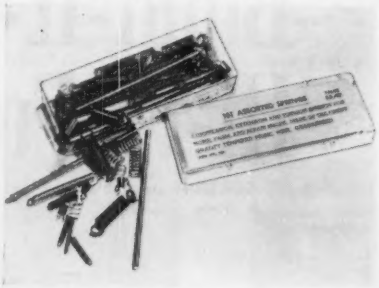
144 Liston Avenue Buffalo 23, N. Y.


## Handy Spring Assortment



VARIOUS KINDS of springs are needed in the home workshop for making repairs, and here is a handy collection of 101. $1, Magic Mold, 473 Livonia Ave., Brooklyn 7, N.Y.

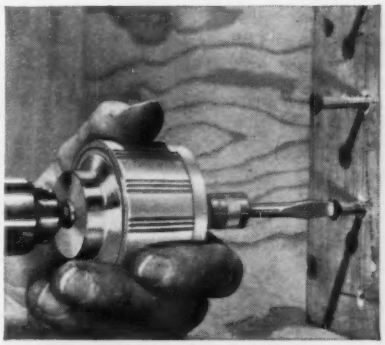
## "End-Finder" Tape Roll

CELLOPHANE TAPE has dozens of uses in the shop, home. This new roll has "End-Finder" that eliminates problem common with this tape. Four times as much tape on 69 cent roll as 25 cent roll, 98 cent dispenser has six times as much. Wherever LePage's products are sold.

## Dial a Compound Miter

HAVE TROUBLE figuring how to cut compound angles and miters on your table or radial-arm saw? The Miterite lets you dial the correct settings for saw arbor and miter gauge to assure a perfect angle every time. $1.00 from Miterite Inc., P.O. Box 786, Campbell, Calif.


*the drill attachment that doubles usefulness of any portable drill*



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If you own an electric drill you can easily double its value by using it with a Supreme Versamate. Versamate speeds up every job. For instance: Drill pilot holes for screws with your electric drill . . . drive the screws with a Versamate. You'll do far better work — faster — without blisters. It's an amazing tool that has the endorsement of ships' carpenters, cabinet makers and other skilled mechanics — yet is simple and easy for anyone to use. Ask your tool dealer for a demonstration.

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# Build-It-Yourself Hi-Fi Furniture

PRIDE IN OWNING a complete and beautiful-sounding hi-fi or stereo set often is tempered by criticism from family and friends when the various speakers and components are scattered about a room. If you hesitate to build furniture for your equipment, but still would like to save money and do it yourself, Sieler Design Products have a knock-down kit that anyone can assemble to produce magnificent furniture that is engineered to be acoustically correct as well as beautiful. The components cabinet and speaker enclosures can be purchased separately, each piece having its own legs, or a complete stereo block, as shown in Fig. 1, and on the cover, may be bought. The Block has a bench with legs, on which are placed the components cabinet and the two speaker enclosures. Acoustic double-interlocking miter joints, inset, Fig. 4, are featured in all units. This joint eliminates need for nails and is resistant to becoming loosened by sound vibrations. The front of the main cabinet has two Tambour doors, each sliding into the cabinet like the cover of an old roll-top desk. The Tambour sections do not have beveled edges, so the doors present a smooth surface when closed.

We obtained a Sieler Stereo Block and assembled it so that we could accurately present this story to you. You start, Fig. 2, with a pile of pieces of walnut-veneered plywood, fir plywood, soft wood blocks, glue, contact adhesive, veneer strips and odds and ends of hardware. In Fig. 2 we have already assembled the bench. We "dry-fitted" the pieces, Fig. 3, then disassembled the cabinet, applied glue and forced the joints together with weights—in this case boxes of ceramic tile, Fig. 4. If you have clamps, Fig. 8, such as our bar clamps from the Adjustable Clamp Co., the job is much simpler and you can apply pressure at every point to produce only a hair-line crack between the various sections of the cabinets. We recommend clamps, and if you plan on building much furniture, they are indispensable. Following the step-by-step instructions, we next applied the veneer strips on the edges of the plywood, Fig. 5. Installation of the Tambour doors was next, then the slide-out shelf for the record player, Fig. 6. The lefthand side of the cabinet is fitted with a panel in which openings are cut for

FIG. 1. The finished Sieler Stereo Block will add beauty to any home, house all your hi-fi components.

FIG. 2. Bench is finished, next step is components cabinet that starts with stack of parts and pieces. Instructions are explicit, given in clear step-by-step, illustrated booklet.

FIG. 3. "Dry-fitting" pieces together assures that you make no errors in assembly after glue is applied to all joints. Rough spots, tight fits, splinters are removed and corrected.

tuners, amplifiers, pre-amps, etc. Applying the hand-rubbed, 3-step oil finish was the final step for the components cabinet, Fig. 7.

Assembly of the speaker enclosures, Figs. 8 and 9, is similar to assembly of the center cabinet. After the grille cloth is stapled over the cutout front panel, Fig. 9, it is fitted in place and held with screws. After the speakers are installed the back of each enclosure is slipped in place with sound-absorbing mats on the inside surfaces to assure distortion-free sound.

After the hand-rubbed oil finish is applied, the Stereo Block has the glowing sheen that only a hand-rubbed finish can impart, and the furniture looks as though built by a master craftsman. △ △

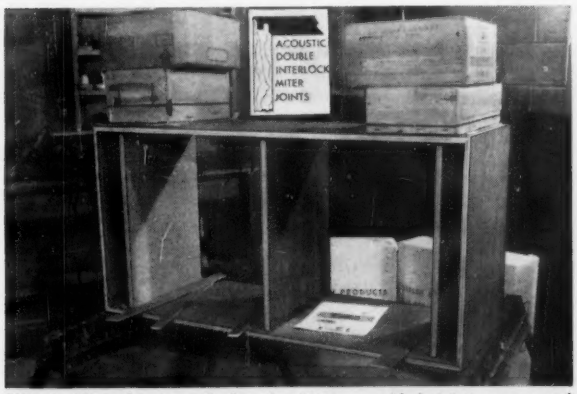



FIG. 4. After glue is applied and cabinet assembled, joints are tapped to tighten, then weights or clamps are applied. Double interlock miter joints, inset, require no nails or screws.

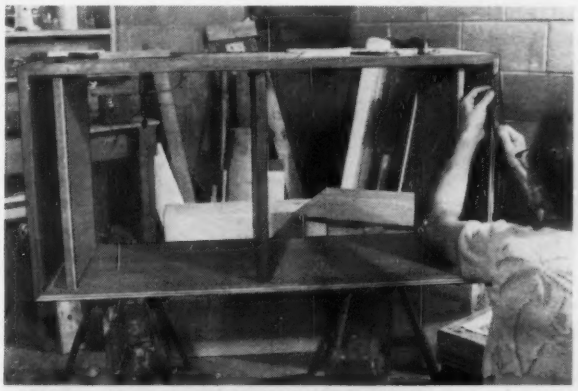


FIG. 5. Two layers of contact adhesive are applied to veneer tape and plywood edges, then tape is pressed into place. Projecting edges of tape then are trimmed flush and sanded with fine-grit paper.

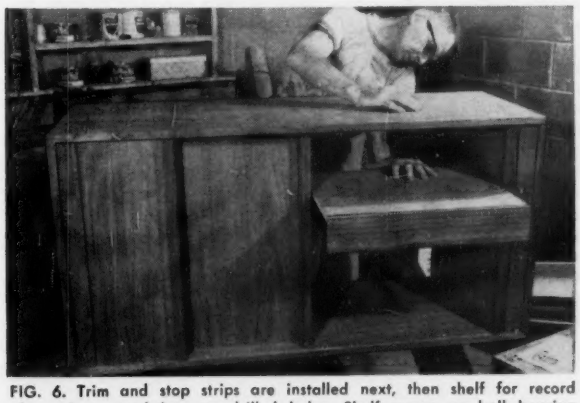


FIG. 6. Trim and stop strips are installed next, then shelf for record player is screwed into pre-drilled holes. Shelf moves on ball bearing tracks. Cutouts have not been made in lefthand panel.

FIG. 7. Oil-finish kit is available from Sieler, is applied in three steps with three different solutions. Sandpaper is used to apply second coat, steel wool used for third coat.

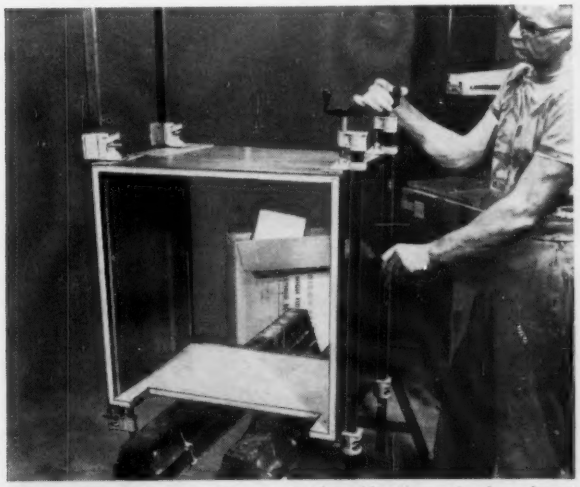


FIG. 8. Use of clamps, such as our Adjustable Clamp Co. bar clamps from the Model Shop are recommended. With these clamps you can apply pressure where needed, reduce each joint to a hairline.

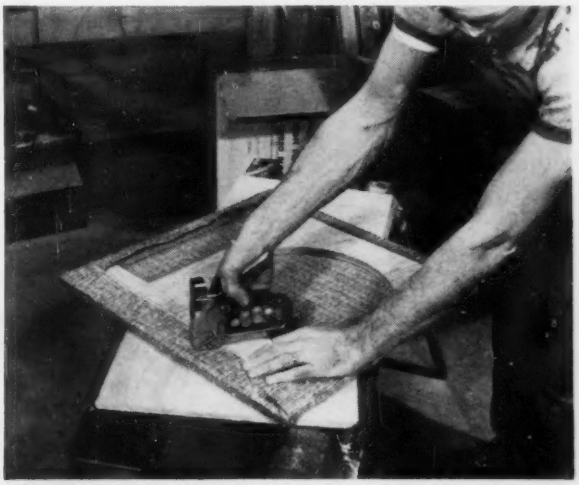


FIG. 9. Grille cloth (not supplied with kit, purchased locally to match a particular decor) is stapled over front panel of speaker enclosure, panel then is held by screws driven through strips inside cabinet.

# Build-Your-Own ELECTRONIC ORGAN

FIG. 1. "And he built it all himself," this proud wife is saying of her husband as she shows friends her beautiful electronic organ.

SEEMINGLY THE ULTIMATE in "electronic self-expression," building an electronic organ from a kit offers a real challenge to anyone who likes to do work requiring patient, meticulous craftsmanship. No more difficult to assemble from a kit than a hi-fi set, an electronic organ even can be made part of a hi-fi or stero set by connecting the organ to play through it. Every part of an organ is included in the kits, Figs. 1, 9, and 13. Cabinets (consoles) may be obtained in a number of finishes, even special selections at moderate extra cost, or unfinished and ready for you to apply a finish of your own choice, Fig. 10. For the Artisan organ kit, Figs. 9 through 12, and the Schober, Figs. 1 through 8, available plans permit you to build your own organ console. In such a case you might want to modify the design of the console so it could be included in a "music wall," or "entertainment center," as found in some homes. All three companies

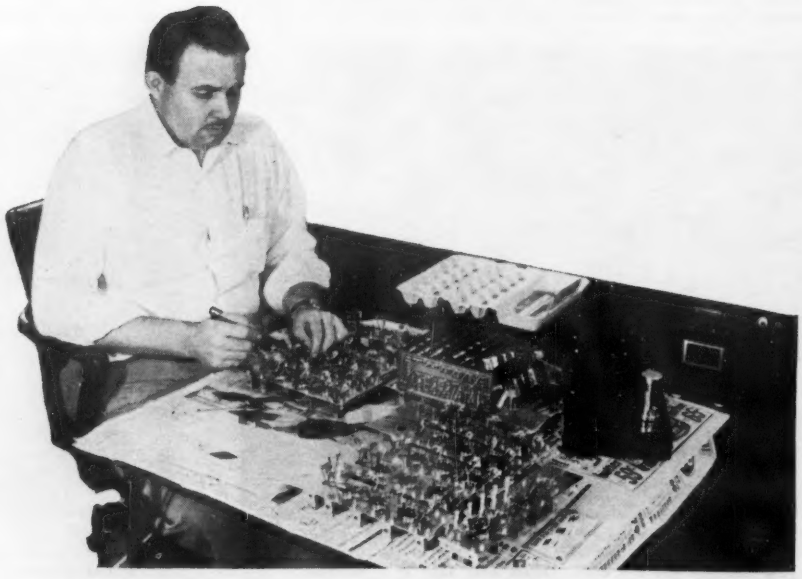


FIG. 2. Detailed instructions simplify the job, but there is need for patience and meticulous craftsmanship in assembling electronic organ.

named in this article make home-size electronic organ kits, and Schober and Artisan kits are available for church or auditorium-size electronic organs. While most of us will be interested primarily in home-size organs, the larger models will be of interest to church and club groups. Because the costs of the kits is one half, or less, the price of a factory-assembled unit, members of an organization can get together to buy and assemble a kit organ when a commercial unit is too expensive.

All three of the organs described in this article are completely electronic; no mechanical devices are used to produce organ tones or sounds. (The single exception here is for bell or chime sounds. Because of the unusual overtone structure of real chimes, the sounds cannot be reproduced electronically and it is necessary to produce the sounds in an almost traditional way. Metal rods in a cabinet are struck by small electro-magnetic hammers and the resulting sounds, which are inaudible outside the cabinet, then are picked up electrically and amplified by

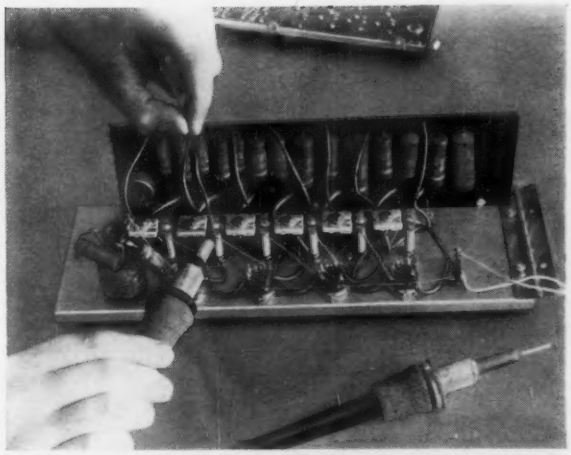


FIG. 3. Closeup of component from Schober organ shows complexity of individual unit, and the reason there is need for careful workmanship. Craftsman will find this work fascinating and rewarding.

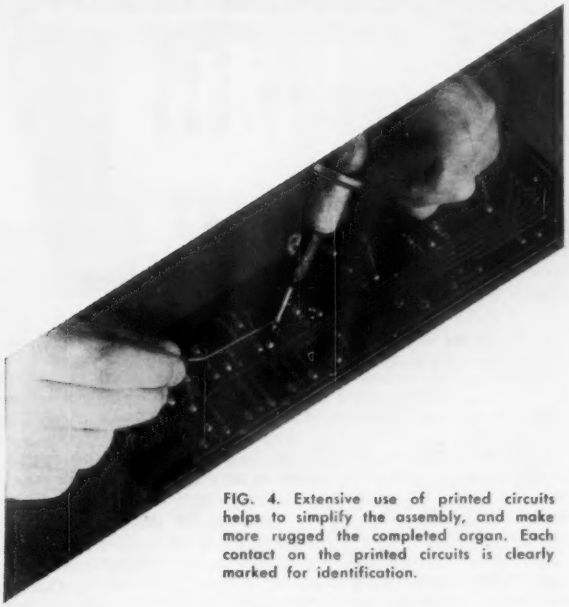


FIG. 4. Extensive use of printed circuits helps to simplify the assembly, and make more rugged the completed organ. Each contact on the printed circuits is clearly marked for identification.

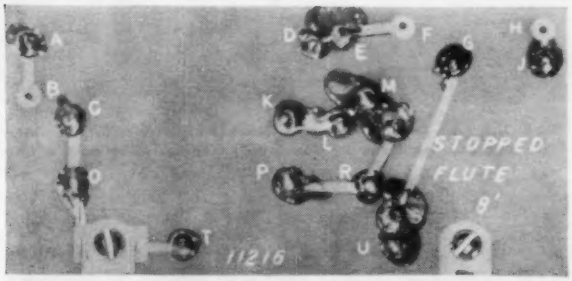



FIG. 5. Enlarged portion of one of the printed circuits shows even more clearly how each contact is identified, and the function of that part of the circuit named, as the 8-ft. stopped flute here.

FIG. 6. This is a single swell-manual, keyswitch assembly, consisting of 61 small printed-circuit boards made into switches that keys will operate.

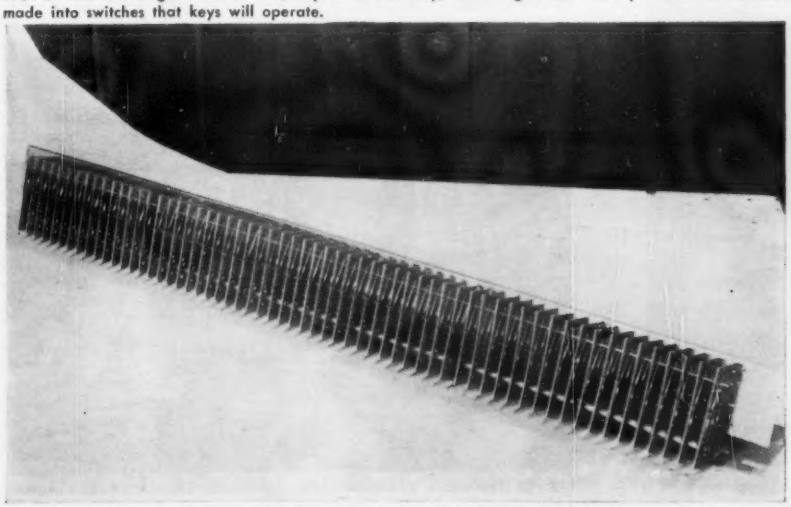


FIG. 7. Closeup of circuit board in swell manual shows three pairs of silver spring wires contacting gold-plated bus bars.

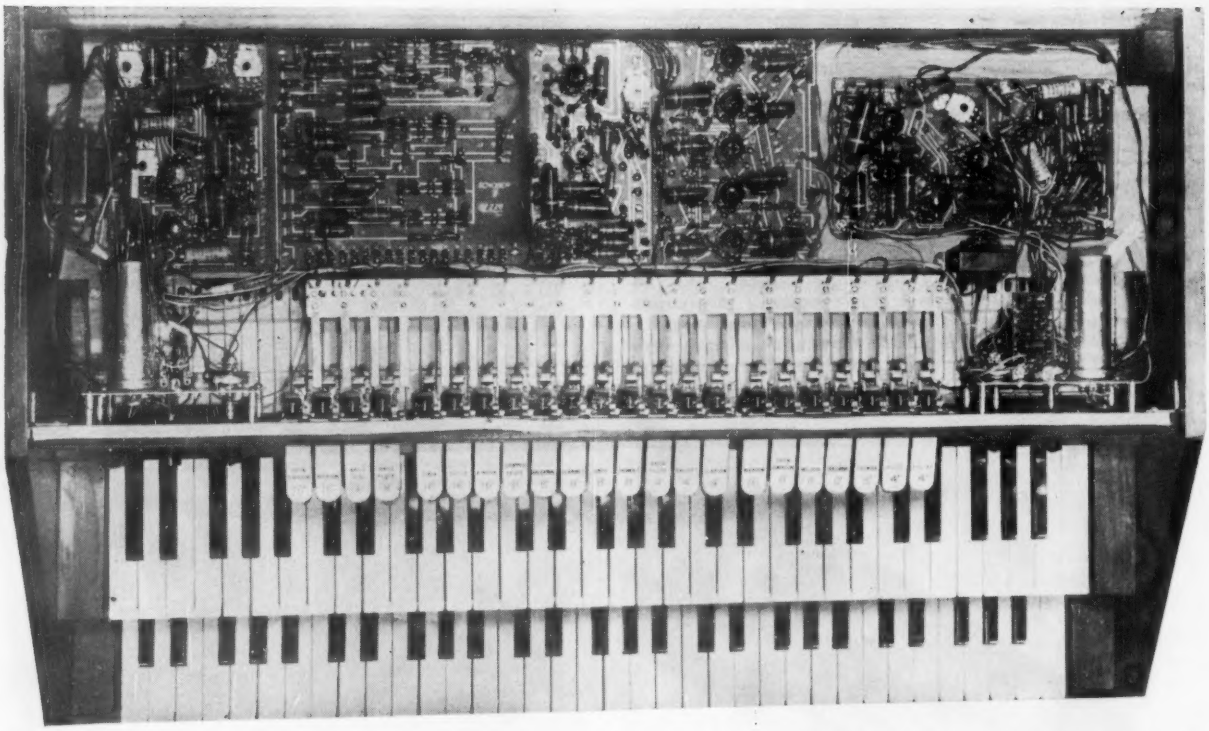


FIG. 8. This view, looking down on a Schober organ with the top removed, gives an idea of the complexity of the completed unit. Despite the seemingly intricate nature, detailed instructions with kit organs make them a simple step-by-step construction problem anyone can handle.

FIG. 9. Inventor Robert L. Eby is shown here with a "beginner's kit" for Artisan Organ. Insert shows full-size, two-manual organ.

the organ's preamplifier and heard through the organ loudspeakers. The chime unit is an extra-cost option that can be fitted on one end of the organ keyboard within easy reach. The chimes are especially delightful when used with Christmas music.)

There is considerable variation in the numbers of tone generators and other devices in the different organs, and each manufacturer can give valid reasons for his particular design. Personal preference will determine your own decision, and we invite you to write to the various manufacturers—their addresses are in advertisements in this issue—for further information. Demonstration records are available for a small fee, usually refunded with the first order, so that you can hear the

FIG. 10. This photo of woodworking shop shows several Artisan consoles under construction, before finish has been applied.

FIG. 11. Assembling an electronic organ is ideal way for man and wife to share interests, work together on a project that both will enjoy.

FIG. 12. Many a wife has become so fascinated that she has completed components of an electronic organ by herself. This is Artisan component.

sounds of a completed kit-built organ. We found the records a listening adventure and anyone who builds an organ can occasionally play the record—on his kit-built hi-fi set, of course—so that he can realize ahead of time how beautiful the organ he is building will sound.

If your wife complains about you spending so much time in your workshop, an electronic-organ kit might be the ideal item for you to build. Women have smaller hands and are more dextrous in fitting wires in radios and other electronic equipment—manufacturers of electronic equipment hire women for these jobs almost exclusively—and an interested wife might reduce construction time of an electronic organ considerably. It must be kept in mind that building an electronic organ calls for patience and perseverance. Figs. 2 through 8 and Figs. 14 through 17 show the many small parts and circuits that must be assembled and wired. There is a lot of time and a lot of work represented here. But, we must say this: A member of the staff is assembling an organ, and has found it so fascinating that he works far into the night on the task. Once you start construction of an electronic organ, you will find it more intensely interesting than a mystery novel, more exacting than the most precise machine work on a lathe, but more rewarding than any other do-it-yourself project that we have seen. Tools required for constructing an electronic organ are few. Primarily you will need a small soldering iron—instructions may require a specific type to fulfill the requirements of a warranty or guarantee—rosin-core solder, (this is an absolute must for any soldering of electronic circuits, as acid-core solder will corrode a connection in time and make a break in the circuit) plus a screw driver and pliers. Side-cutting or diagonal-cutting pliers are needed for cutting wires, and a wire stripper, such as the Vaco tool in the Model Shop, simplifies stripping insulation from the ends of wires. Our Champion-DeArment electronic pliers are designed especially for this type of work, and if you plan on building an electronic organ, it would be worth your while to have them. They can be used for dozens of other jobs after you have finished assembling the organ. As with any job, assembling electronic components is easier with the right kind of tools.

The electronic impulses in the organ must be changed to sound by means of preamplifiers and amplifiers and loudspeakers, just as the sounds from records and radio tuners are. Some types of organs have loudspeakers and other equipment built into the console, others use an

FIG. 13. This is completely assembled "Musicraft" electronic organ, available in kit form from National Sonics Corp. It will beautify any home.

exterior speaker. In most cases the organ can be wired to play through a hi-fi or stereo set, for better distribution of sound, and also to save the cost of the components. Thus, if you have a hi-fi set, the cost of a kit-built electronic organ immediately is less than if you do not. If you have no interest in owning either a hi-fi or stereo set, quality speakers and amplifiers are available from the manufacturers of the kit organs. Should you assemble an organ and have trouble, the instruction sheets

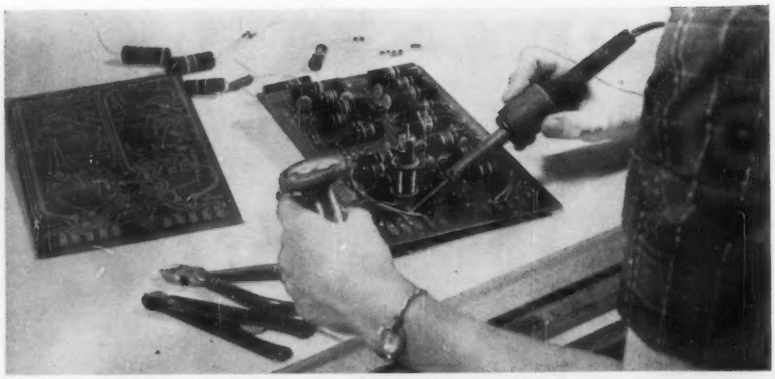


FIG. 14. Extensive use of printed circuitry is feature of all kit-built electronic organs. Here one of six dual-note tone generator boards for Musicraft organ is being assembled by housewife.

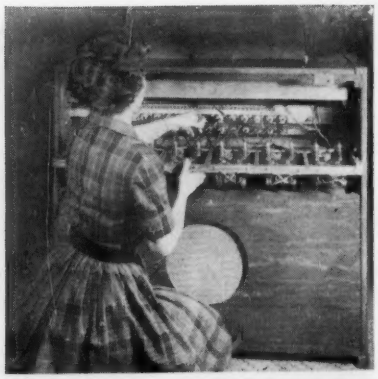


FIG. 15. Back of organ here is open to show bass-speaker opening, tone-generator panel folded down for access to keyboard plugs.

FIG. 16. One of final steps in assembly of electronic organ is fitting pre-drilled and finished foot pedals in place. This set is for electronic organ that is shown in Fig. 13.

FIG. 17. This photo shows bus amplifier, pedal-tone generator and all stop filters and switches, looking at Musicraft organ with top pivoted up and back out of way.

with the organs tell you where to write for help. The help is given at no cost in most cases. All you need do is tell them how the organ is acting, and, with their experience the engineers of the manufacturers can pin-point the trouble and tell you how to correct it. Your first job with an electronic-organ kit is to open all packages and inventory the contents. Any parts that are missing will be supplied; any parts that you damage will be provided at a specific price.

Follow the instructions closely, have patience and perseverance and you will be the owner of a beautiful electronic musical instrument. △ △

# Book Reviews

ENCYCLOPEDIA FOR MODERN FIREARMS
Gun Digest Co.
227 W. Washington St., Chicago 6, Ill.

CONTAINING OVER 1,600 drawings, photos, cutaways and blueprints of shotguns, rifles and handguns, this book has over 1,000 pages, weighs 8 lb. A must for the bookshelf of a gun fancier.

IDEAS FOR STORAGE IN YOUR HOME
Lane Publishing Co.,
Menlo Park, Calif., $1.75.

THIS BOOK of ideas shows by sketch, photo and description how to build and plan storage areas in a home. Described is method of evaluating factory-built units, as well as how to build your own storage walls, dividers, etc. Includes 350 photos.

CONTEMPORARY AND TRADITIONAL FURNITURE
by Verne Weeks
Bruce Publishing Co.,
400 N. Broadway, Milwaukee 1, Wis.

CONTAINED IN this book are detailed instructions and photos for making 32 pieces of furniture of Early American, Duncan Phyfe and Contemporary designs. If you like building furniture, this book belongs in your workshop library.

**"Yes, Here It Is Grace, It's 2 Sand, 3 Gravel, and One Cement."**

# Short-Wave Radio Kit

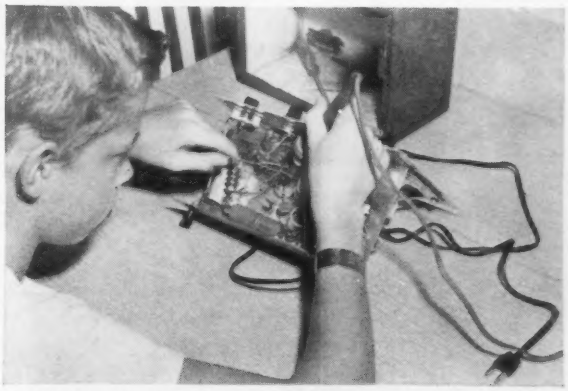
IS IT TRUE that anyone can assemble electronic kits, as the advertisements say? Well, we know that a 13-year-old youngster can assemble one. Our test was to give this young man a Knight-Kit Space Spanner radio kit and tell him to build it. In two evenings he assembled the set completely with no help, other than a check of his first few soldered connections. The Space Spanner sells for less than $20, has a selector switch for both broadcast and short-wave bands and is complete with its own attractive plastic-covered case. Headphone connectors at rear of set permit use of headphones for private listening, cutout switch provides instant control for private or nonprivate listening by cutting speaker in or out. Instruction booklet explains principles of radio, tells how to set up antenna for best short-wave reception. This kit is sold by Allied Radio of Chicago, and is listed in their catalog, available by writing to them. Their address is listed at the end of the Hi-Fi article.

Finished and tested, the short-wave set is plugged in and humming. Just a turn of the dial brings in voices from Russia, South America and a jumble of static that says South Africa.

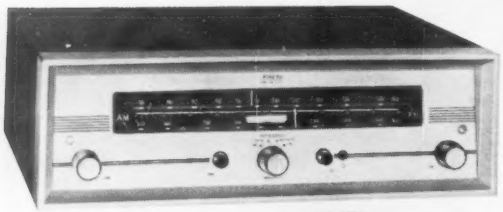
"Now, just what are all these strange little parts, and what do those odd terms mean?" this young fellow is musing. Kit is ideal way of learning rudiments of electronics.

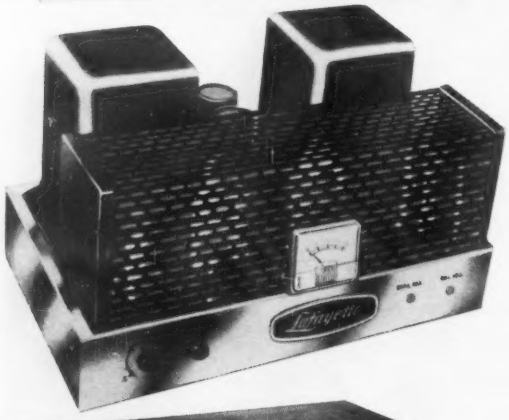
Well illustrated, step-by-step directions are easy to follow, but require concentration by this youngster in his first contact with the fascinating complexities of electronics.

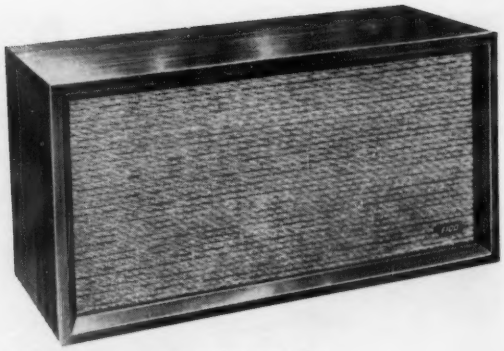
It is not too long before even the beginner works more quickly and with confidence, as he learns difference between resistors, capacitors and other units that combine to make a radio.



Dad checks out the first few solder jobs on the connections, then the young electronics engineer is on his own. Set was finished in two evenings, operated perfectly on first try.





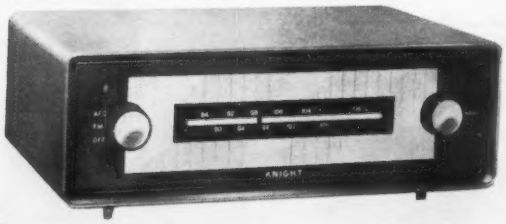


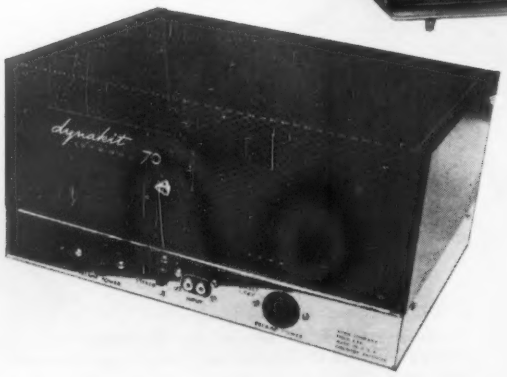
# HI-FI SETS

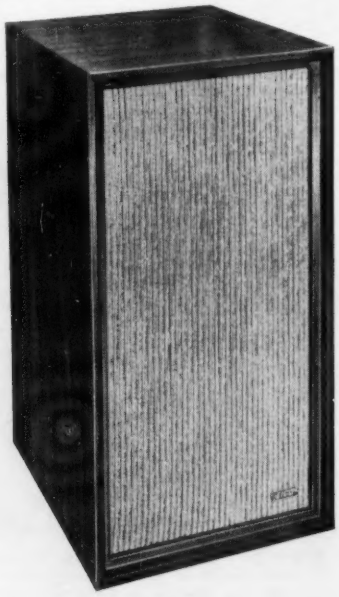
## From Low-Cost Kits

THERE ARE FEW activities that give more pleasure and genuine relaxation than listening to good music. Fig 1, no matter whether you consider "good" to mean the classics, Dixieland jazz or contemporary melodies. A collection of records or tapes is the usual method of having a selection of music to fit our individual moods, while there are FM radio stations, and even a few AM stations that also have "listenable" music. Stations that can be received by an ordinary radio are AM (Amplitude Modulation), while FM (Frequency Modulation) stations require a special type receiver. The increasing popularity of FM stations is due to the fact that they have a minimum of commercials, play good music almost constantly, and are static-free even during thunderstorms, so their broadcast signals are truer.

No matter what the source of music, a hi-fi (short for high fidelity) set is required for the most faithful reproduction of the music originally recorded. A hi-fi set consists of several components. First, a program source, whether a record turntable, a tape deck, an AM tuner or FM tuner, or combination AM-FM tuner, is required. The electronic signal produced then is fed to a preamplifier, which strengthens the signal. The increased signal then goes to an amplifier that strengthens the signal even more, so that it now can be channeled to loudspeakers that change the electronic signal mechanically







1. Kit-built units from several companies, speaker enclosures built from plans are in this setup. Builder is all set for relaxing listening.

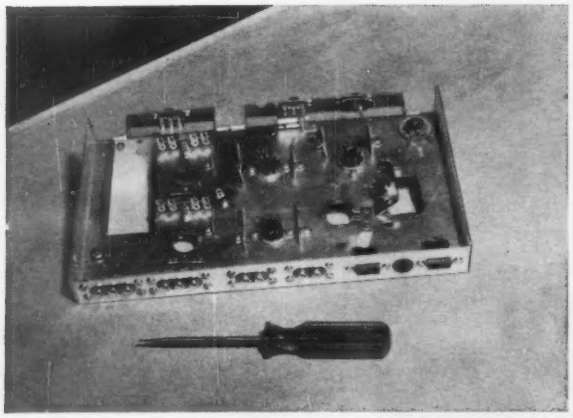
into sound. This seemingly complicated array of components can be assembled from kits by anyone who can handle a soldering iron, screw driver and pliers. Staff members who had no previous electronic knowledge put together kits from Allied Radio, Heath Co., Dynaco and Eico. Examination of kits from other companies showed them also simple to assemble. Loudspeakers for the kit-assembled hi-fi set were fitted in enclosures made in the WORKBENCH Model Shop, from plans such as are available from several speaker and kit manufacturers. A major advantage of building hi-fi sets from kits is that you can save up to half the price of a comparable factory-assembled unit. Accurately written and well illustrated instructions, Figs. 2 and 3, are the primary reason that hi-fi, and other electronic kits can be assembled so easily. Only soldering skill is required, and correct-soldering techniques are included in assembly instructions packed with each kit.

Patience is required and you must be fairly meticulous. Each assembly step is listed, and when it is done, is checked off. When you receive your kit, first empty all packages and check each item against the parts list, Fig. 2. Instructions with the kits tell what to do if parts are missing or have been damaged. You will need a small soldering iron. Pliers and a screw driver are the other tools required. Not all kits include solder, so a roll of rosin-core solder is needed. It must be **rosin**-core solder; the use of acid-core solder, or solder and paste flux, will void any warranty on a kit. A kitchen table, or card table, will provide the work space you need if you have no workshop. Layers of newspaper prevent hot solder from damaging the table. The boxes in which the parts were packed, and the lids, may be used to keep the parts sorted, Figs. 2 and 3, or egg cartons can be utilized for keeping the parts separated.

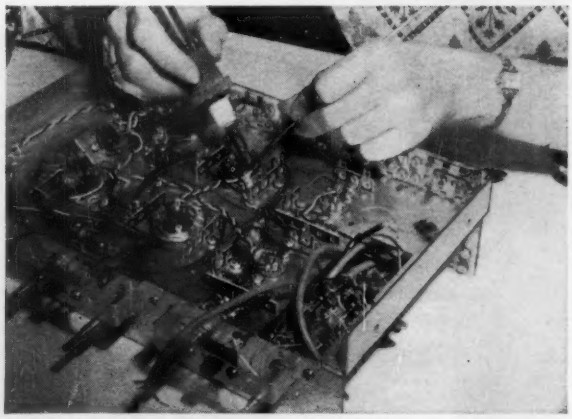
Actual assembly of the hi-fi component (preamp, amplifier, or tuner) usually begins by bolting various items to the chassis, Fig. 4. In the process of installing various parts you will begin to get a familiarity with electronic terms and will soon know what an "octal"

2. Very first step in assembling hi-fi from kit is to make accurate inventory of parts. Missing or broken items should be listed and seller notified so items can be replaced before you start assembly.

3. Clear step-by-step instructions with excellent illustrations of assemblies being described make assembly of hi-fi kits a simple job. Note full-size illustration of the unit being assembled.



4. Screw driver and small wrench or pliers are used for much of assembly, as here, where units are being attached to the chassis. Chassis are preformed, all openings cut to size for installations.

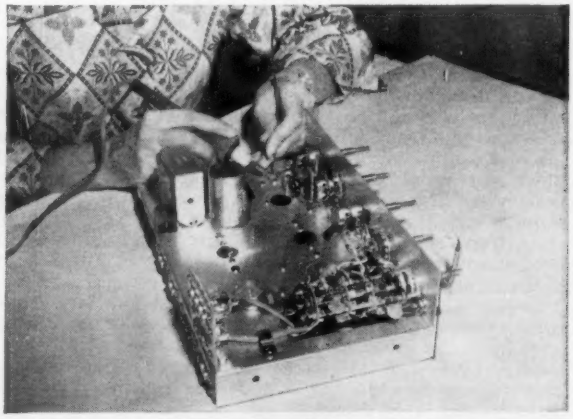


5. Wife or daughter is ideal helper for job of wiring and soldering many connections required in hi-fi assembly. Here the lady is working on the "spaghetti" on the underside of the chassis; one of the tube sockets.

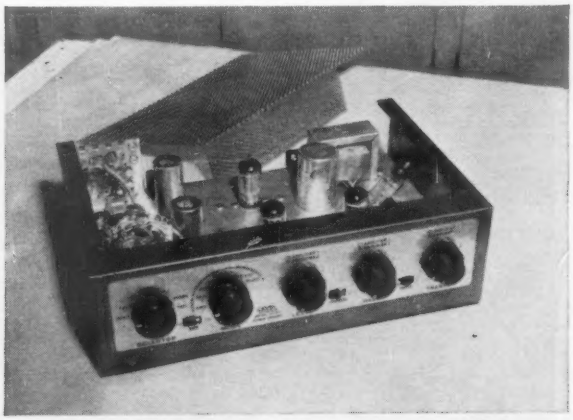
socket is, and the difference between resistors and capacitors. (See glossary of terms on page 50-51.) Connecting wires to various units and soldering them, Figs. 5 and 6, are the last steps before fitting the chassis in a case and putting on a cover, Figs. 7 and 8. You will want to test-operate the unit before fitting the cover, and if you have any trouble, there is a trouble-shooting list in the instructions to aid you. When you have real problems, you can correspond with the kit manufacturer, and even send your set in for a checkup at a moderate charge.

Although the metal cabinets for the components look well with modern decor, wooden "slip-on" covers are available to fit other types of furnishings. Speakers are the last items you purchase, then enclosures for them are built or bought (see "Hi-Fi Furniture" in this issue) and you can start enjoying music. Kits are available at various prices and forms. For example, some tuners are combined with an amplifier to reduce both the cost and required space. Because of the great variety, we suggest you contact the following companies for information:

Allied Radio Corp. (Knight-Kits), 100 N. Western Ave., Chicago 80, Ill.
Burstein-Applebee Co., 1012-14 McGee St., Kansas City 6, Mo.
Dynaco, (Dynakits), 617 N. 41st St., Phila. 4, Pa.
Electronic Instrument Co., (Eico), 33-00 Northern Blvd., Long Island City 1, N.Y.
Electro-Voice, Inc., Buchanan, Mich.
Heath Co., (Heathkits), Benton Harbor, Mich.
Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, N.Y.
Paco Electronics Co., 70-31 84th St., Glendale 27, Long Island, N.Y.
Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass. △ △



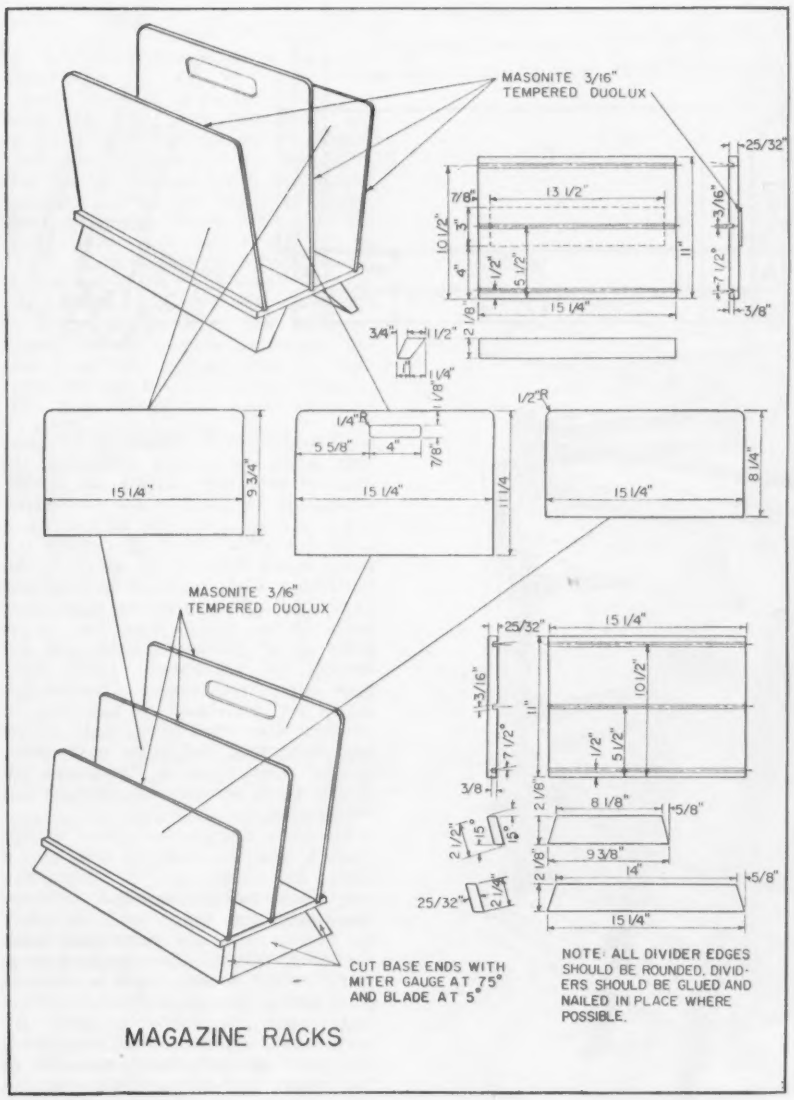
6. When the work is done on the underside of the chassis, it is turned over and work on top is done. Note that near unit is the assembly first shown being put together in Fig. 3. Other units also are preassembled.

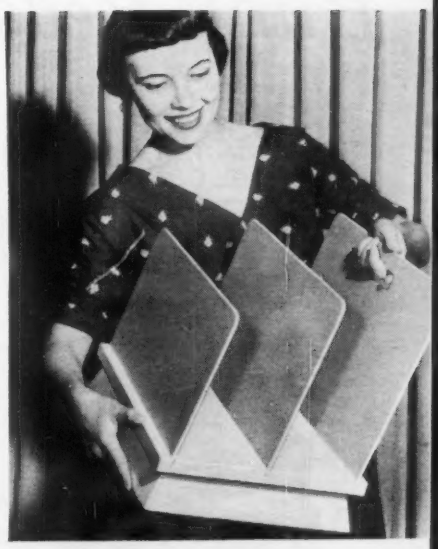


7. Last stage in assembly of kit-built hi-fi unit is fitting on knobs, inserting tubes, checking to see that there are no unsoldered connections.

8. Perforated-metal cover completes attractive appearance of hi-fi component, wooden covers are available for units to match a decor.

# Companion Magazine Racks

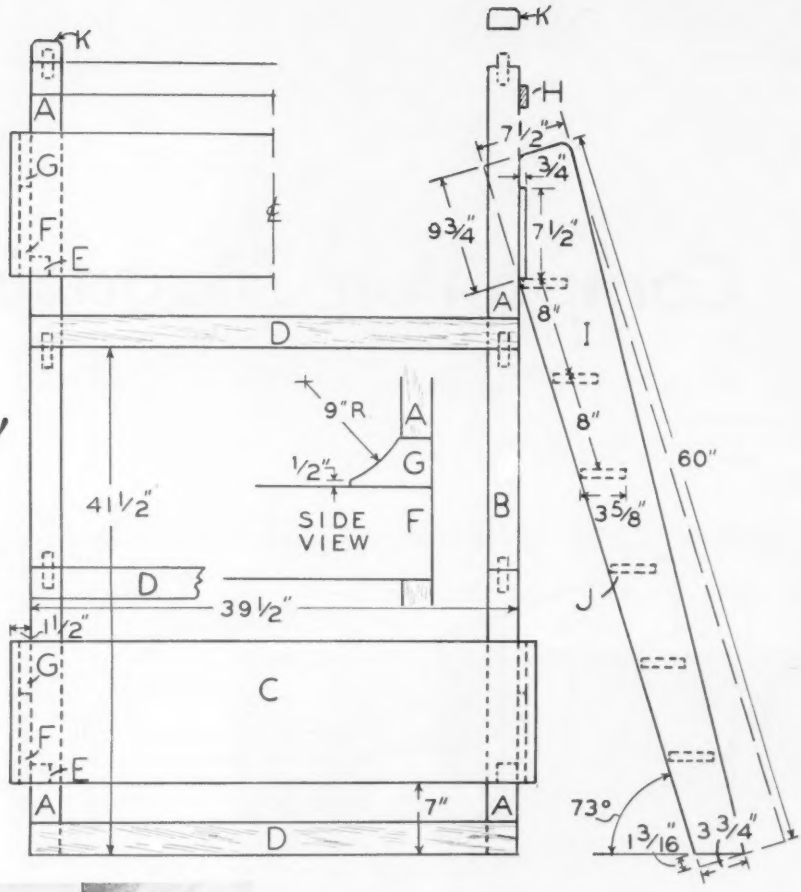


**TWO SIMILAR** styles of magazine racks can be made by the craftsman as companion projects, as the construction is similar and the materials list almost identical. Both plans call for accuracy of adjustment in setting a table or radial-arm saw to cut the kerfs in the bases in which the dividers are fitted, and to cut the compound miters on the ends of the base members. In each case, the dividers, Masonite 3/16-in. Tempered Duolux, are set in saw kerfs cut in a wooden base 25/32-in. thick, (the actual thickness of 1-in. stock). Divider edges are rounded with a sander or a block and sandpaper before being nailed in place. Varnish can be applied.

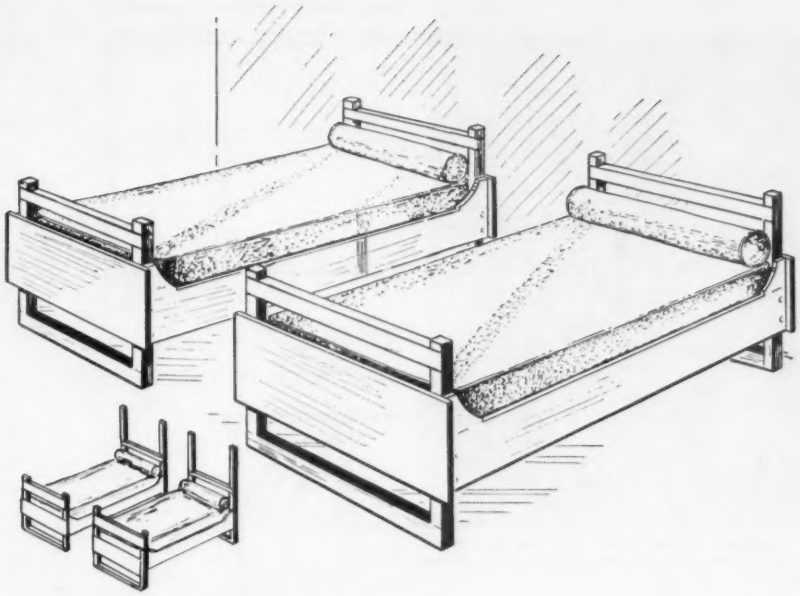
Full details are given in the accompanying plan, and one of the completed magazine racks is shown in the photograph.

# *Contemporary Bunk Beds*



SIMPLE ENOUGH IN DESIGN to be built with hand tools, this bunk-bed set in contemporary styling is sturdy enough to be used in the children's room, a vacation cabin or even in a fall-out shelter. Start by cutting the parts to the dimensions given in the Materials List, using well-seasoned hardwood with a pleasing grain pattern. Draw guide lines for screw holes at all joint positions, and assemble all permanent joints with glue and wood screws. Countersink screw and nail heads so they can be covered with wood filler. Rails (G-F) join head and foot units with bolts, so the beds may be disassembled. Brass wood screws are used on the safety rail.

Alternate designs are given. If you wish to use the beds as low, single beds, four separate "B" posts are cut. These posts are fitted between the upper and lower "A" members on dowels and are reinforced with mending plates. Energetic youngsters might loosen such a double-joint setup, so an alternate method is to make the lower "A" and "B" members one piece. When these beds are used as twin beds, one end of the upper bed is switched with an end of the lower bed so that each unit

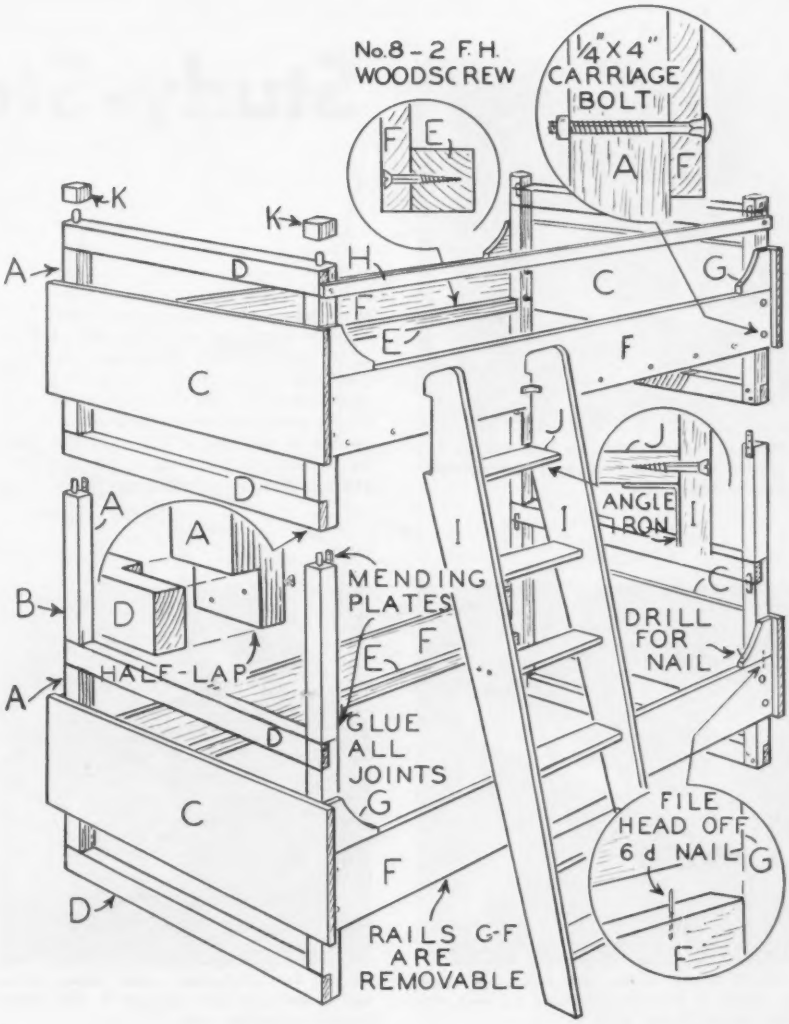


D 8 End rails 3⅝" x 3⅝" x 39½"
E 4 Slat rails 1⅝" x 1⅝" x 73¾"
F 4 Side rails ¾" x 7½" x 79"
G 8 Tops of side rails ¾" x 4" x 6⅝"
H 1 Safety rail ¾" x 1⅝" x 79"
I Ladder sides ¾" x 7½" x 60"
J 6 Steps ¾" x 3⅝" x 15"
K 4 Caps 2" x 3⅝" x 3⅝"
Miscellaneous:
4—⅞" x 4" Mending plates
14—½" x 1½" x 1½" Inside-corner steel angles
16—¼" x 4" Carriage bolts
6 doz.—2" No. 8 flathead wood screws
2—1¾" No. 8 roundhead brass wood screws
6d finishing nails
Glue

has a high headboard, as in the small illustration.

Bore holes in posts for bolts that hold rails "F." Join end rails "D" to posts with half-lap joints. Mount head and footboards so they project 1½ in. beyond posts and locate mending plates on inside of posts. Next, edge-glue pieces "G" and "F" using nails with heads cut off to "pin" them together in alignment. Bore holes in the rails to match those in the posts and attach slat rails "E" to the rails, flush to the bottoms. Space screws equidistant along the slat rails and drive them through from the inside. Bolt rails to posts, then glue dowels in upper ends of all posts. Square caps now are fitted on the dowels of the upper bed, while the dowels in the lower bed receive the lower ends of the "B" posts fitted between the beds, or alternately, when "A-B" posts are used, the lower ends of the upper bedposts fit on the dowels of the "A-B" posts. A spare set of four caps should be made and stored away for use when the bunk beds are used as twin beds. Mending plates, bolt heads and steel angles are painted with brown enamel of a color that closely approximates the color of the stain used on the wood.

Standard springs and mattresses can be used, or slats fitted across the slat rails will permit using smaller spring-and-mattress sets.




### Materials List

Oak, birch or other suitable hardwood solid stock:

A 8 Posts 3⅝" x 3⅝" x 25½"
B 4 Posts 3⅝" x 3⅝" x 16"
(Alternate design requires 4 A Posts, 4 A-B Posts. Latter are 3⅝" x 3⅝" x 41½")
C 4 Head and footboards ¾" x 11½" x 42½"

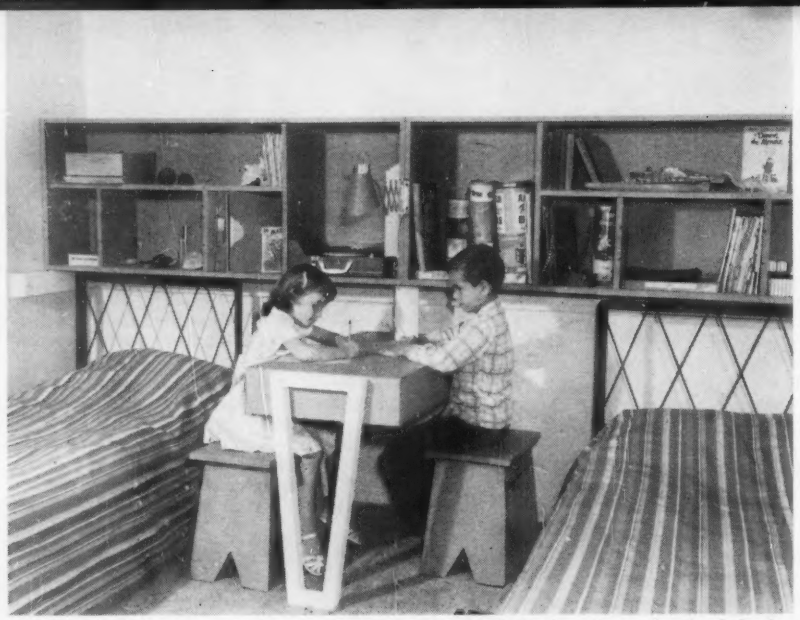


FIG. 1. Only desk requires floor space when unit is completed. Benches store under the desk when not in use. A drawer on each side of the desk is used by the youngster who has that side of the room, and shelf area on that side of the room.

# Study-Storage Wall

**HERB SHANNON**

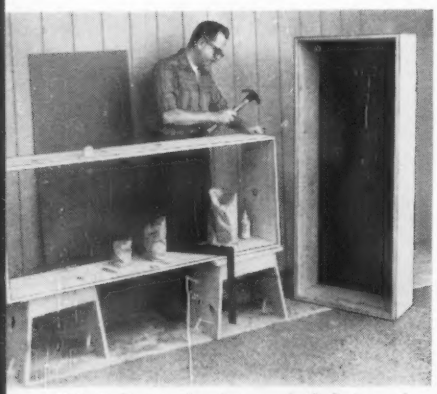


FIG. 2. Storage benches are built first, so they can be used as handy supports when constructing the other units.

BUILT AS a solution to lack of play and storage space in a bedroom just 10 x 12 ft. that already contained two single beds and a chest of drawers, this study-storage wall requires only slight modification to be used in other rooms in the home, Fig. 1. First step in construction is to build the two storage benches, lefthand detail, Fig. 9, which then can be used as handy supports for constructing the shelf and desk units, Figs. 2 and 3. The benches are cut from 1 x 12 pine stock, with ⅛-in. hardboard being used for the bottom of the storage compartments beneath the hinged tops. The sides of the desk, lower detail, Fig. 5, also are cut from 1-in. stock, but the top is cut from ¾-in. plywood. Note that the design of the desk is such that a drawer pulls out on each side so that each child has one for himself, Fig. 3 and 6. The single leg of the desk, Fig. 5, is formed by gluing and nailing together stock made by ripping a 2 x 4 in half lengthwise. This leg is glued and nailed flush with the top of the desk and the desk then is levelled with one end against the wall, Fig. 6. This permits marking on the wall the position of the top of the offset bracket which supports the wall end of the desk. The bracket is detailed in Fig. 5, and is used to provide a support that can be nailed to a single wall stud. Dimensions must be changed to suit an individual situation, so no dimensions are given. After the bracket is spiked or screwed to the stud, Fig. 4, the end of the desk then is nailed to it, Fig. 6. The shelf units, Figs. 2, 5 and 8, are

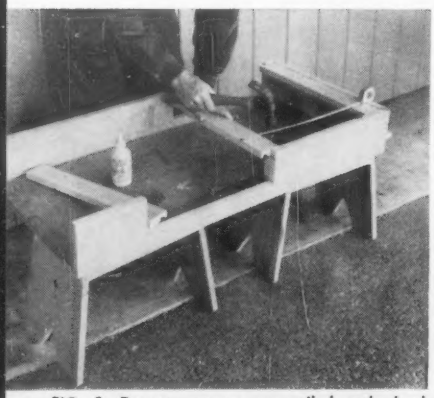


FIG. 3. Drawer runners are nailed and glued to blocks so their lower surfaces are flush with the bottom of the desk.

FIG. 4. Two 3½-in.-long wood screws driven into a wall stud are sufficient to hold offset bracket supporting desk.

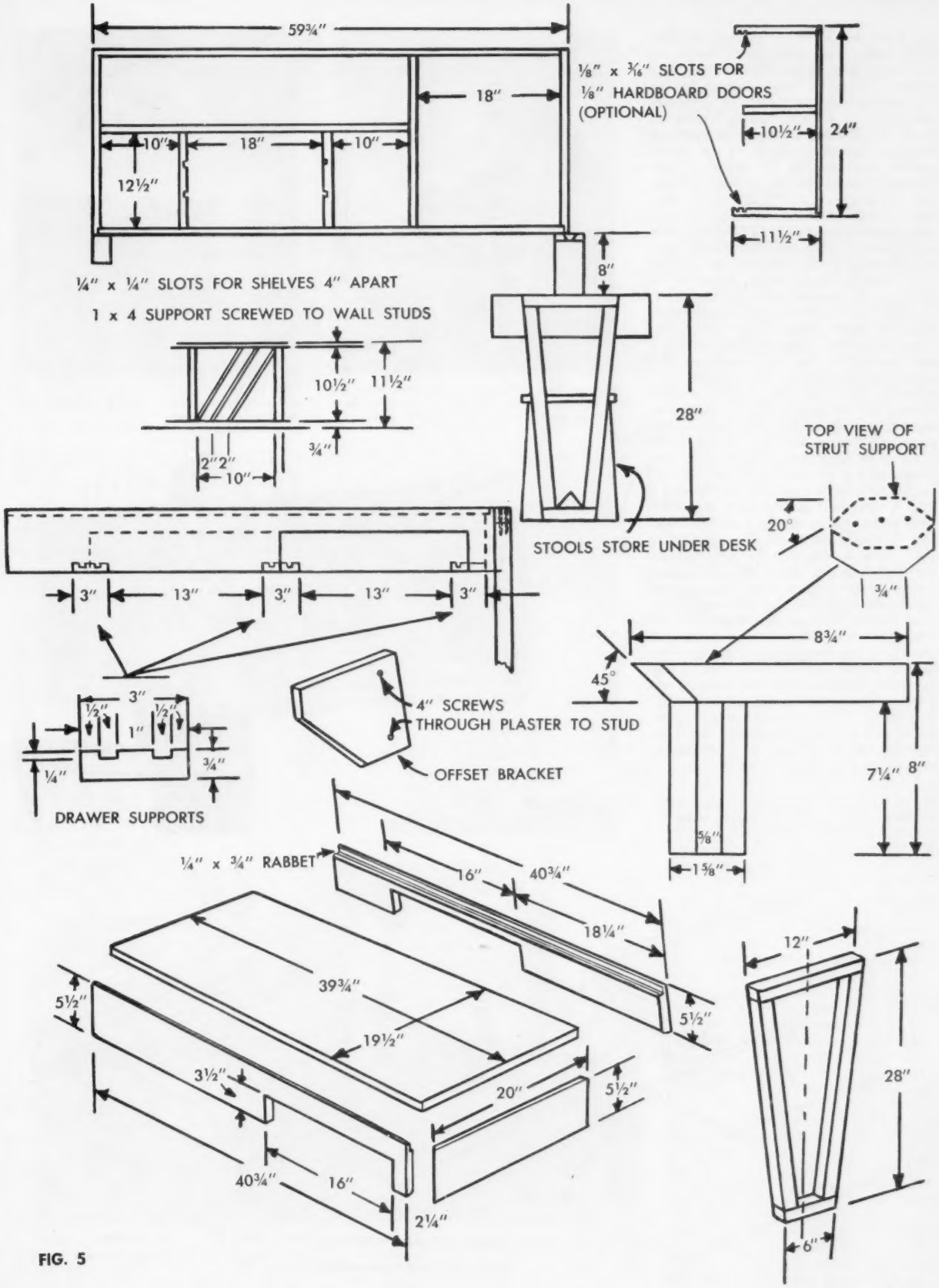

59¾"
18"
10"
18"
10"
12½"
⅛" x 3/16" SLOTS FOR
⅛" HARDBOARD DOORS
(OPTIONAL)
10½"
24"
11½"
¼" x ¼" SLOTS FOR SHELVES 4" APART
1 x 4 SUPPORT SCREWED TO WALL STUDS
10½"
11½"
¾"
2" 2"
10"
8"
28"
STOOLS STORE UNDER DESK
TOP VIEW OF
STRUT SUPPORT
20°
¾"
3"
13"
3"
13"
3"
8¾"
45°
3"
½"
½"
1"
¼"
¾"
DRAWER SUPPORTS
4" SCREWS
THROUGH PLASTER TO STUD
OFFSET BRACKET
7¼"
8"
⅝"
1⅝"
¼" x ¾" RABBET
16"
40¾"
18¼"
39¾"
19½"
5½"
5½"
3½"
20"
5½"
40¾"
16"
2¼"
12"
28"
6"

FIG. 5

cut from 1 x 12 material and assembled with glue and nails. Backs of the units are ⅛-in. hardboard (Masonite). Grooves were sawed in the top and bottom members of the original unit to accept sliding doors of ⅛-in. hardboard, which is an optional feature. Grooves ¼ x ¼ in. were sawed horizontally in some of the vertical members for possible insertion of shelves cut from ¼-in. plywood at a later date. The record compartment in the lefthand unit uses ⅛-in hardboard dividers to permit storing 12-in. records in a shelf only 10½ in. deep, Figs. 1 and 5. To support the shelf units on the wall, a length of 1 x 4 is nailed to the wall with its upper edge 8 in. above the top of the desk. Short lengths of 2 x 4 are nailed to the side wall at the same level, Fig. 8, to support the ends of the units. A "strut" at the center of the desk, Fig. 7, supports the inner ends of the shelf units. The strut consists of a length of 1 x 4 cut with a 45-deg. bevel to match the shape of a 2 x 4 that has four bevels cut on it with the saw set at 20 deg., Fig. 5. One end of the strut is nailed to a notch cut in the 1x 4 on the wall, Fig. 7, the other to the 2 x 4 upright. Two screws are driven up through the desk top into the 2 x 4. The completed shelf units now can be fitted in place and nailed to the wall supports. It is easier to paint the units before fitting them in place. In the matter of changing the length of the shelf units to fit a particular length of wall, keep the total length of the two units ½ in. shorter than the length of the wall. A gap of ¼ in. at each end of the units will not be noticeable, but 1/16 in. too much length will result in broken plaster, or worse. △ △

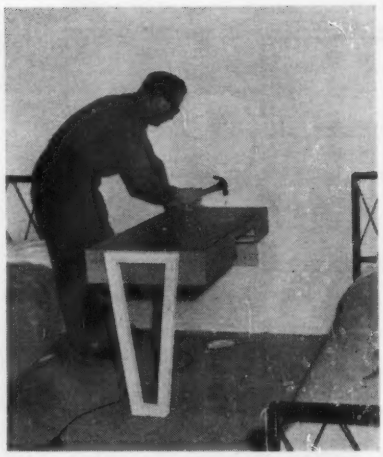


FIG. 6. Desk is nailed to wall cleat after leg is attached. Level is used to determine location of wall bracket that supports desk.

FIG. 7. Top piece of center support strut is nailed in notch cut in 1 x 4 strip nailed to wall. Shelves set on strip.

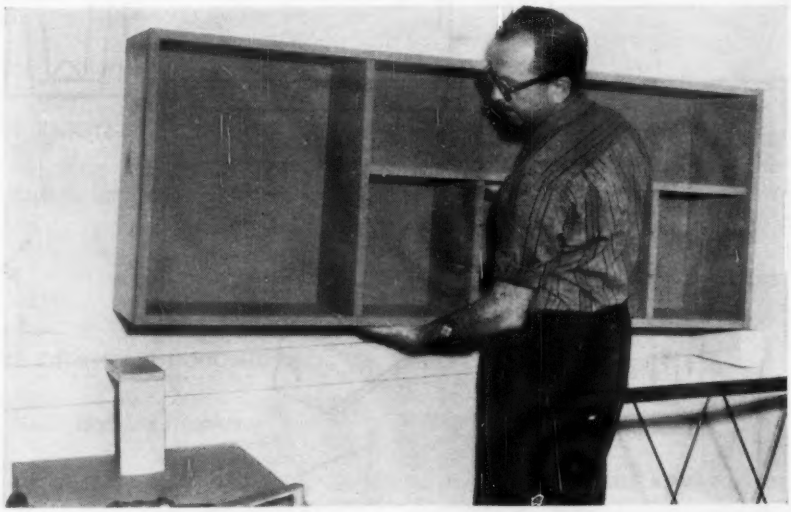


FIG. 8. Shelf units are painted before being positioned on supports and nailed in place. All units can be painted beforehand.

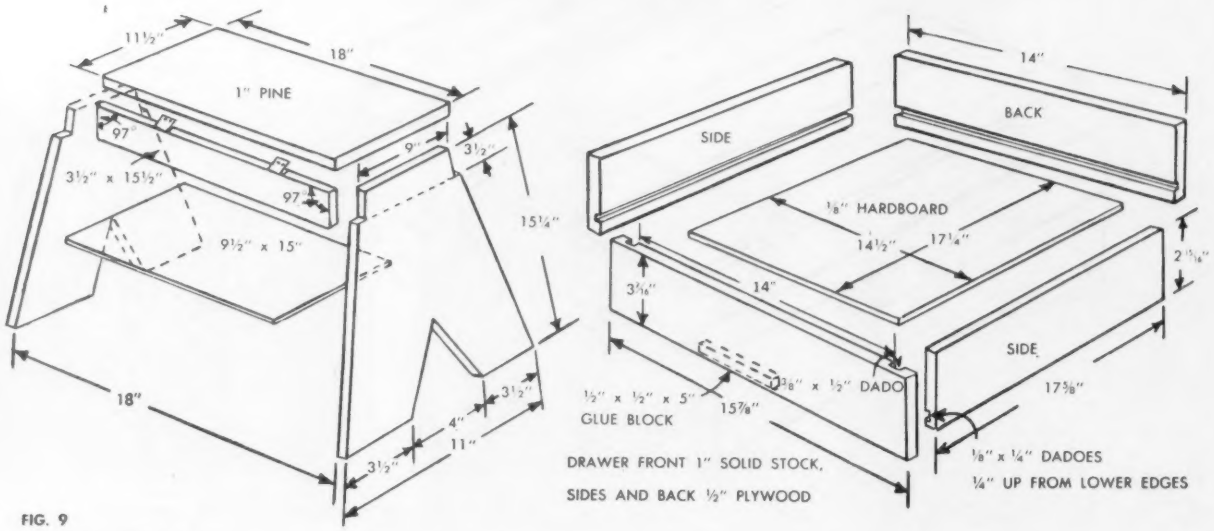
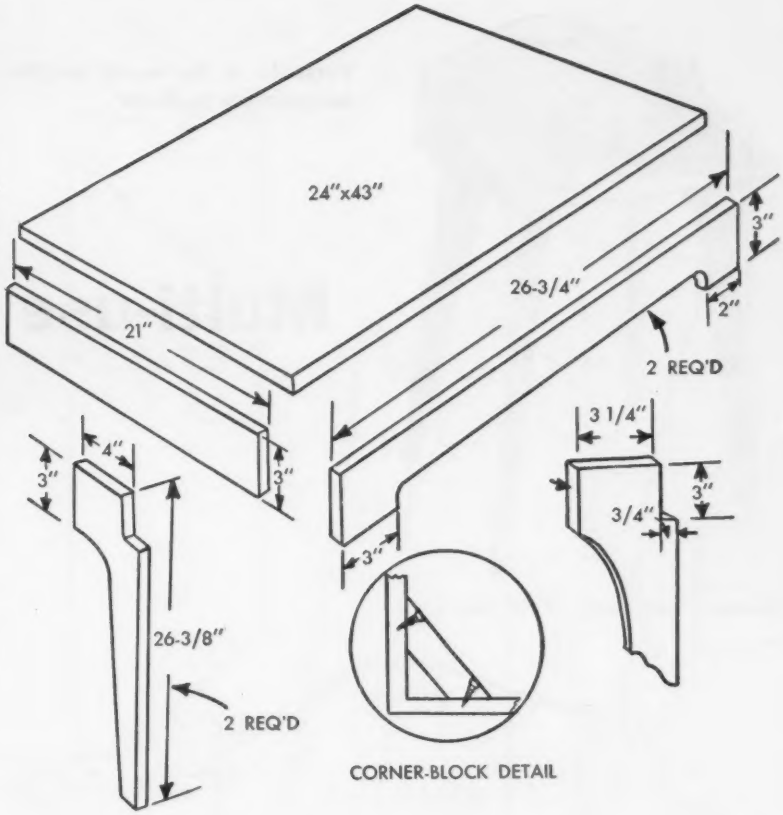



FIG. 9

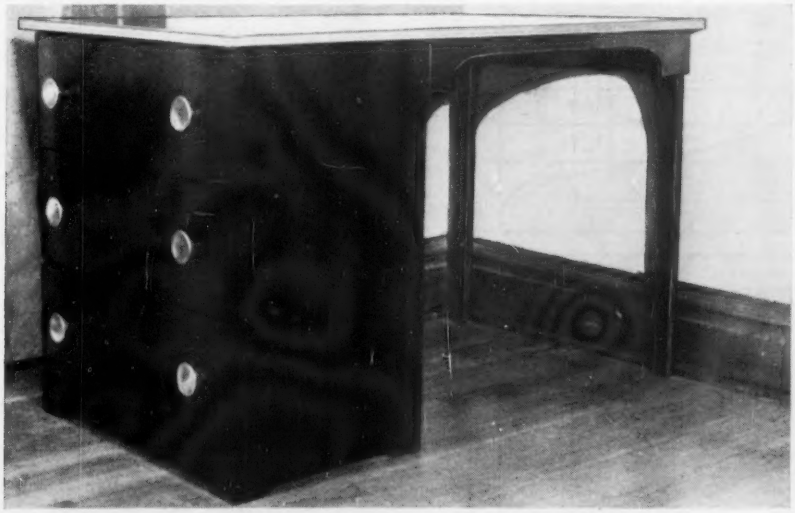
Even larger items, such as drapes, can be handled on this sewing table without having them drop to the floor and become soiled.



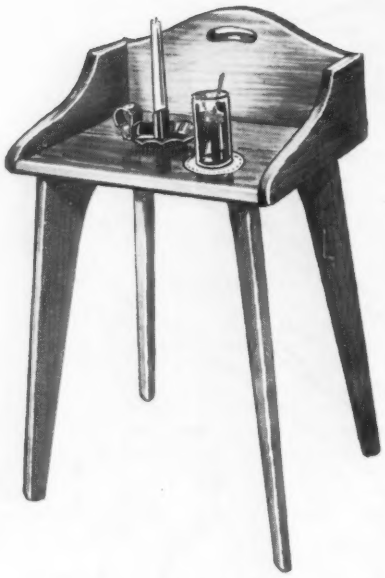

# Table-Chest Sewing Center

**WEBSTER P. TAYLOR**

PORTABLE SEWING MACHINES usually are placed on a kitchen or dining-room table when used, which means that at mealtime a sewing project must be stopped and the work put away. Here is a solution to that problem, that provides not only a place specifically for sewing only, but also ample storage for sewing supplies as well. The basis for the table is any chest of reasonable working height from which the top is removed and a plywood extension top substituted. A pair of legs and apron strips cut from plywood complete the unit. Size of the table top can be varied to suit available space or individual requirements. Dimensions shown are those used for the original, and can be changed where necessary to accommodate a chest of a different height and width. The plywood top is attached to the chest in the same manner as was the original top, in most cases with angled blocks as shown in the drawing. Edges of the new plywood top can be sealed with veneer tape, or metal edging such as used on surfaces covered with plastic laminate, (Formica, Micarta, etc.). Laminate would be an excellent material to use for the sewing-table top, also. The chest, legs and apron are finished in the same manner, so the completed sewing center appears as one unit. Storage space for the sewing machine can be provided, if the drawers are not deep enough to accept it, by cleating two drawer fronts together to form a door. Hinged to open, the door would swing out to reveal a shelf on which the machine can be placed, with storage in the remaining space. △ △



Utilizing ready-built chest as basis for the sewing table permits it to be built with a minimum of labor and materials. Plywood top, legs and apron produce an attractive piece of furniture that can double as desk for students in family when it is not being used for sewing projects. Other uses for it could include being a sideboard when you are serving buffet-style meals.

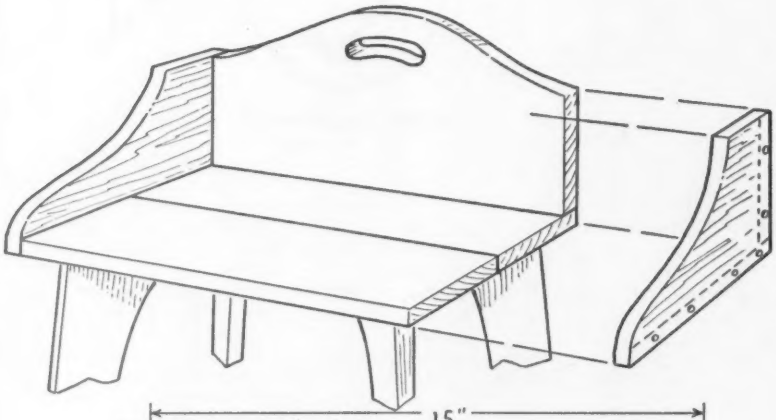


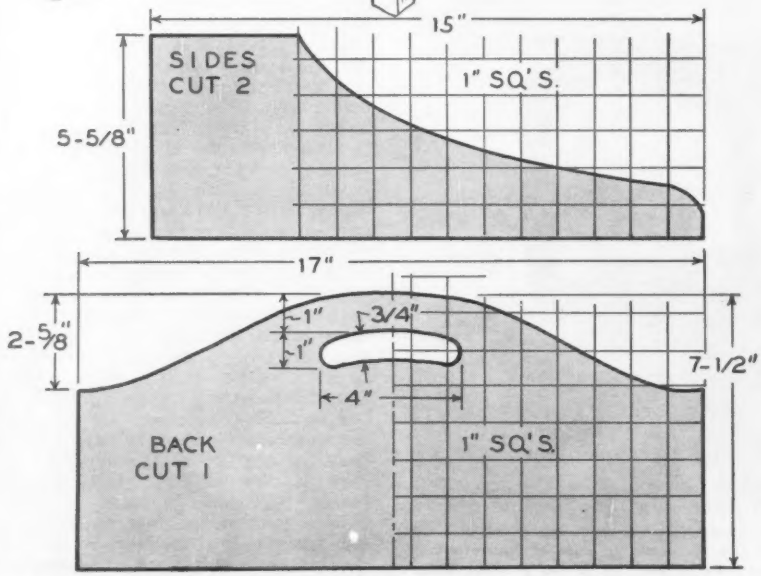
This easy-to-make candlestand has many uses.

**Versatile is the word for this candlestand, both in function and adaptability to decor.**

# Multi-use Candlestand

ROBERTA L. FAIRALL



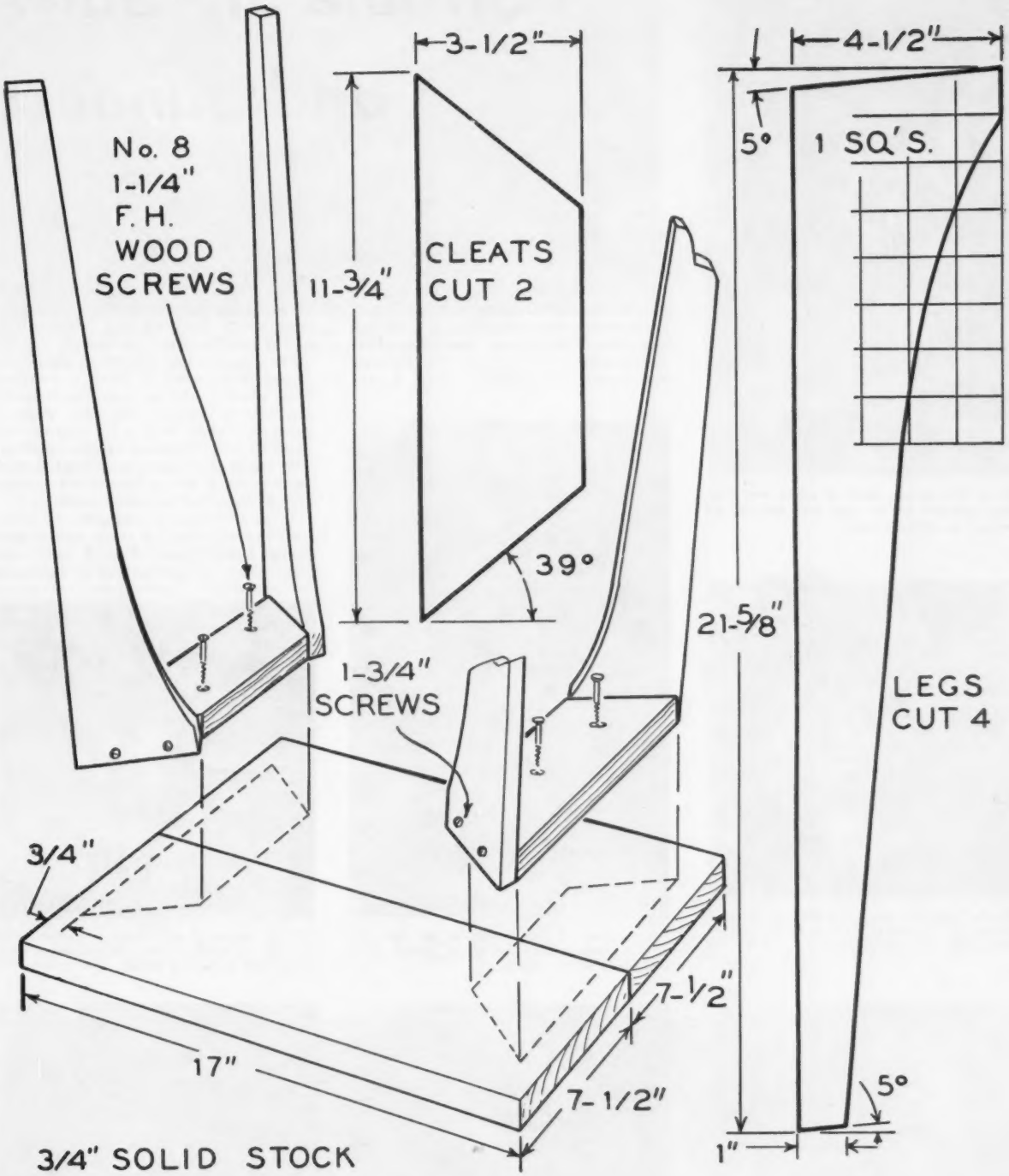



Full-size patterns for side and back may be laid out on a paper ruled in 1" squares.

WOULD YOU like to add a country-pine candlestand to your collection? The simple lines of its design will complement either contemporary or Early American furnishings, and you will find it a handy tote table, cigarette or plant stand. Even use it for its original purpose, and thus increase the mellow charm of candlelight at any season.

Rigid construction is gained by the use of glue and screws on all joints. Hand tools put it together from well-seasoned solid pine in the following easy assembly steps:

1. Make paper patterns for contour pieces. Lay out remaining members directly on the lumber, and saw out.
2. Square-up and finish the individual sections to exact dimensions, and sand away saw marks.
3. Locate positions and bore shank and countersink holes for screws.
4. First, assemble the leg units by joining legs to ends of cleats; then join these units to the underside of the stand top.
5. Next, turn in screws from underneath top to join back section. Assemble the sides with back and top. Remember to countersink all screws deeply enough so you can cover the heads with wood filler.
6. Round off edges and corners with sandpaper. Emphasize the grain by brushing on a light-brown stain. Wipe it off immediately to bring out highlights. Add a water-resistant finish with two coats of exterior spar varnish. Be sure to sand lightly between coats and polish the shine from the last coat with No. 4/0 steel wool. Bring up the luster with paste wax.




**Note** that leg units act as cleats to hold edge-glued top boards together.

# Portable Jig Saws and Sanders

FIG. 1. Thor jig saw used by young lady illustrates versatility of this type tool that can be operated by almost anyone.

WHATEVER YOUR NEED or budget, there is a portable electric jig saw and a sander for your home workshop. Modern jig saws are lightweight, precision tools that even women and youngsters can use, Fig. 1, but are rugged, long-lasting machines that will handle the toughest jobs. Cutting scrollwork and patterns, Fig. 2, are the jobs for which jig saws are most commonly used, but the saws also are effective for crosscutting and ripping. Rip guides that clamp to the shoes of the saws also help cut circles accurately. Ripping and crosscutting heavy stock, Figs. 3 and 4, is another job handled by some jig saws. There is no need to bore a starting hole when a slot or opening is to be cut with a portable jig saw. Figs. 5 through 7 show how a jig saw can be used to cut its own starting opening. The toe of the saw shoe is held firmly on the stock while the blade gradually is lowered into the wood.

If your shop or budget, or both, are limited, a setup such as the Skil "Snap-Lock" line, Fig. 8, will fill your need. A special collar is fitted

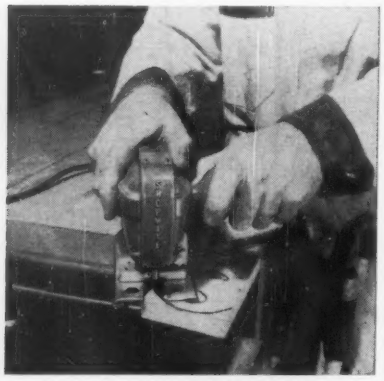


FIG. 2. Shopmate saw used here shows most popular use of jig saw, which is to cut intricate curves and scrollwork in wood.

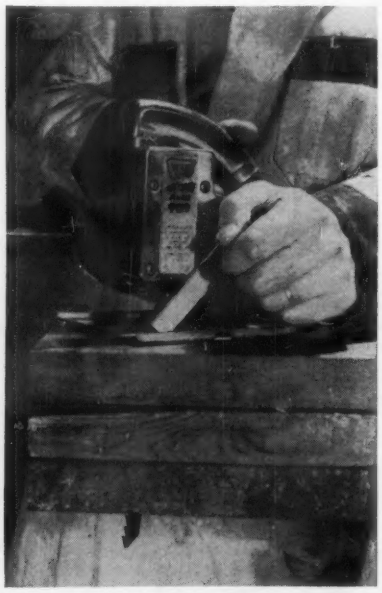


FIG. 3. Wen All Saw is oversize unit that will drive a blade long enough to cut through three thicknesses of 2-in. lumber.

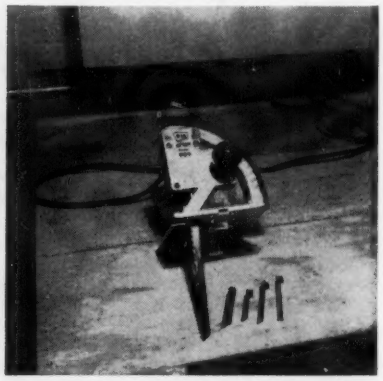


FIG. 4. Variety of saw blades and paper knife that can be used in Wen saw are shown here, along with extra-long blade.

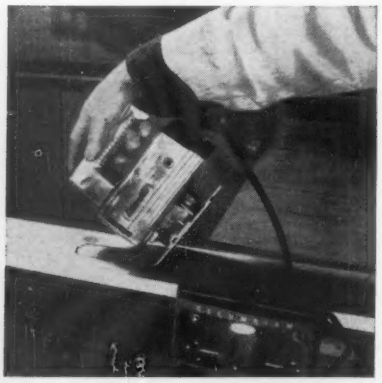


FIG. 5. Cummins jig saw shows first step in cutting hole without using a drill. Shoe is held firmly, blade is eased to surface of wood.

FIG. 6. Second step in sawing cutout is to slowly lower sawing blade into stock, keeping front of shoe firmly on wood surface.

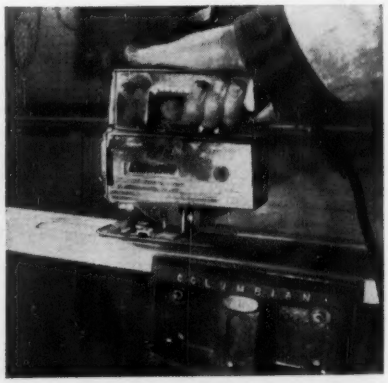


FIG. 7. In final step, blade has cut through, shoe of saw is held flat on stock and saw is guided along line that indicates cutout.

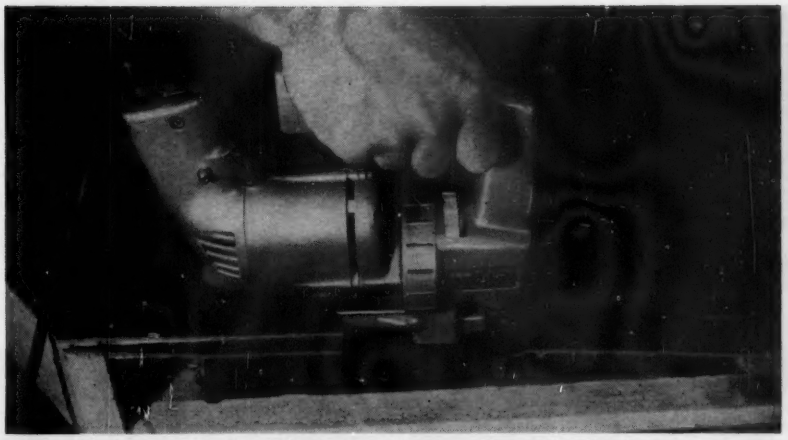


FIG. 8. Skil "Snap-Lock" unit is ¼-in. electric drill motor with special collar that permits it to be snapped into jig saw accessory. Unit is close-coupled, well-balanced. Being used here to saw ⅛-in. hardwood, it easily cuts heavier material.

FIG. 9. Snapping driving unit into another accessory provides handy orbital sander with Skil "Snap-Lock" outfit now available.

on the ¼-in. drill motor, so that it will snap into a number of accessories. A jig saw is one of the units.

The same "Snap-Lock" setup fits into an orbital sander, Fig. 9. A sander is a must for any home craftsman that does much building or refinishing of furniture. For all-around work, the best choice would be an orbital-type, Figs. 9, 10, 14, 16, 19, and 20. A fitting for attaching a plastic hose that can be connected to any vacuum cleaner for immediate and constant removal of dust is the feature of one orbital sander, Fig. 16. The sander in Fig. 20 can be changed from orbital to straight-line action by turning a key at the rear of the tool. For continuous straight-line sanding of fine finishes, and for heavy-duty smoothing of floors and the like, belt sanders are the answer, Figs. 11, 12, 13 and 17. Fig. 13 shows a belt sander fitted on an accessory table so that it can be used for accurate edge sanding, and even sharpening of tools. Disk sanders, Figs. 15 and 18, are used for a variety of work. The slow-speed unit in Fig. 15 can be fitted with a wool bonnet so that it can be used for polishing. The tool in Fig. 18 is an accessory that can be chucked in any ¼-in. drill motor. Sanding disks are attached to the face of the disk with adhesive, so there is no center hole. The face of the disk is backed with a soft material that assures the disk will not gouge a work surface. △ △

FIG. 10. Shopmate orbital sander here is being used to smooth end grain of shape cut from 1-in. lumber and held in Columbian woodworker's vise.

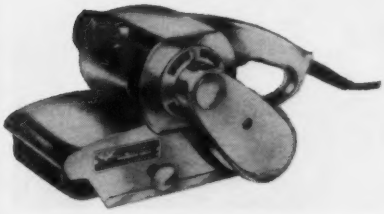


FIG. 11. Millers Falls line now includes two heavy-duty belt sanders. One has ¾ H.P. motor, with 3x21-in. belt. Other has 1 H.P., 4x21-in. belt.

FIG. 12. Porter-Cable belt sander makes fast work of smoothing the surface of this plywood to be used for cabinet door. Two-hand control assures that the tool goes where you want it to.

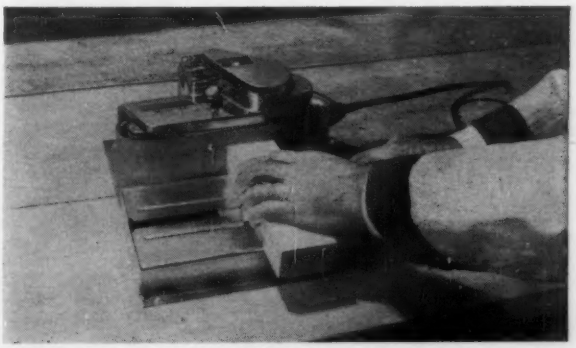


FIG. 13. Accessory for Porter-Cable belt sander is steel table onto which it clamps. Machine then can be used for accurate edge-sanding, and even for sharpening edges of chisels and other cutting tools.

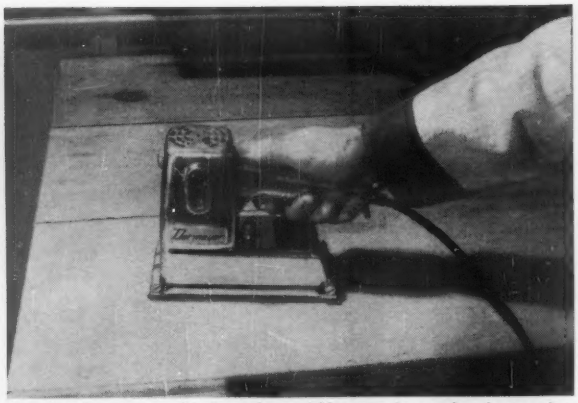


FIG. 14. Dormeyer orbital sander quickly smooths up bench top that has been nicked and gouged in area of woodworker's vise. For light work all orbital units can be controlled with one hand as shown here.

FIG. 15. Dormeyer disk-sander polisher is slow-speed unit (1200 r.p.m.) that does excellent job of sanding, and has sheep's wool bonnet that fits over rubber disk to produce burn-free polishing of waxed surfaces.

FIG. 16. Black and Decker orbital sander has fitting with plastic hose to which a vacuum cleaner can be attached to remove sanding dust.

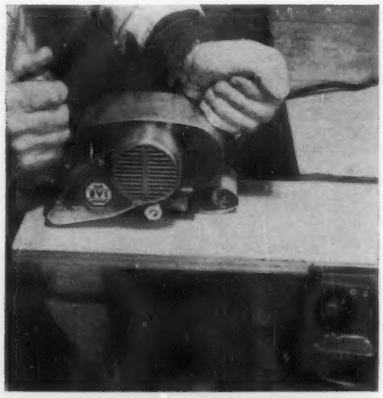


FIG. 17. BVI belt sander is light-duty unit with handy thumb switch in top end of open handle. Knurled thumbscrew below housing adjusts alignment of belt.

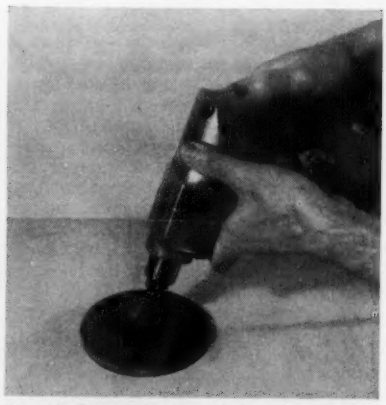


FIG. 18. Flexan rotary surface sander is accessory that can be chucked in any ¼-in. drill motor. Adhesive holds sanding disk on full face of disk.

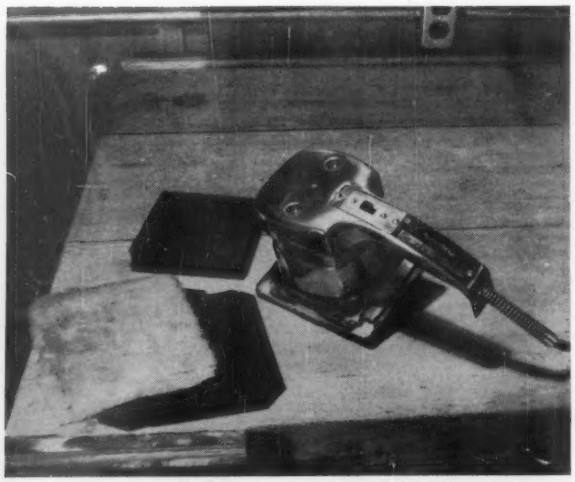


FIG. 19. Speedway orbital sander can be fitted with felt and sheepskin pads for fine finishing of furniture. Rubber pad assures smooth sanding. Unit also can be used for massaging tired muscles.

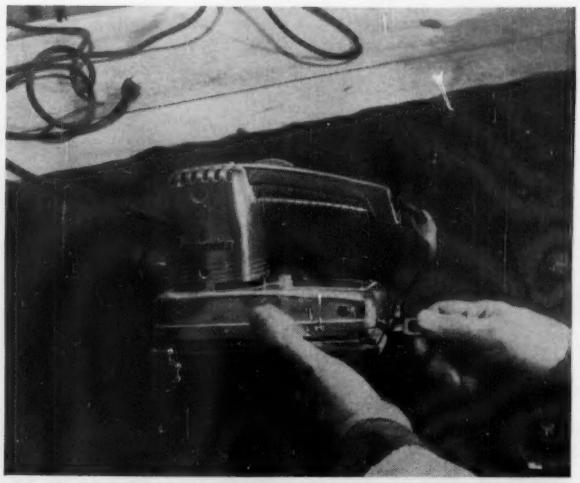
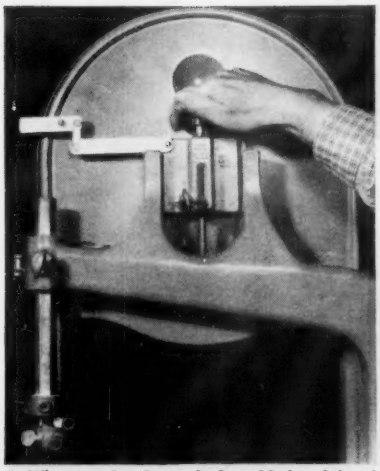


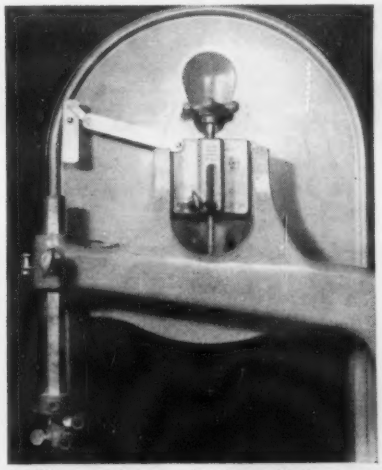
FIG. 20. Cummins unit changes action from orbital to straight-line when key is used to turn shaft at rear of machine. As with most units, knob for second hand can be used at several places on tool.

# BAND SAW SIGNAL

ROBERT R. CLARK

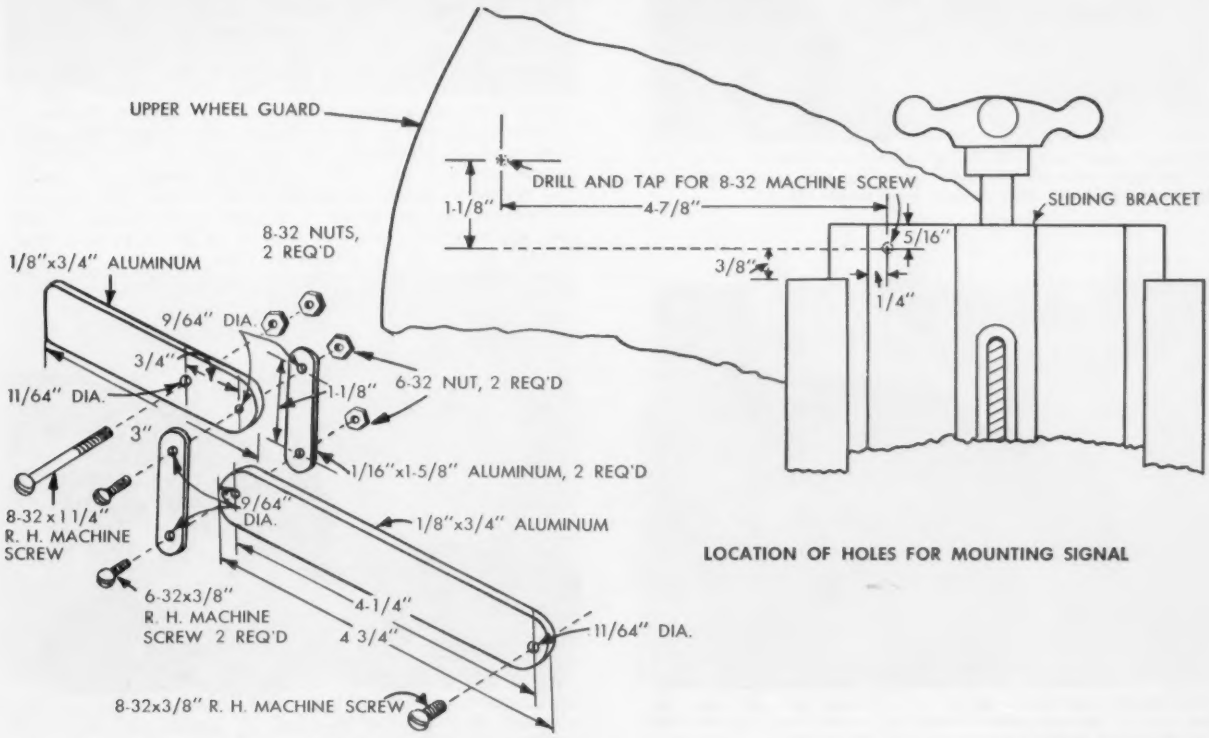


1. When tension is applied to blade of band saw, sliding block raises and lifts long arm of signal. Weight of long arm pulls link which moves short arm to horizontal position.



2. When tension on band-saw blade is released, sliding block moves down, raising opposite end of long arm of signal. Link is pushed up, causing signal arm to drop downward.

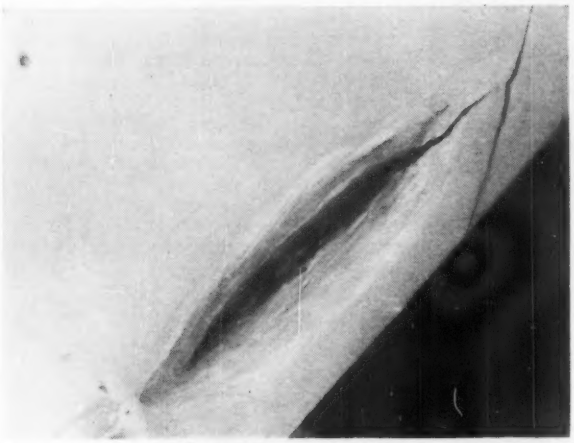
RELEASING TENSION on a band saw blade when the saw is not being used, which is recommended practice, sometimes results in using the saw with the blade slack. This simple signalling device will show at a glance whether the blade is slack or under tension, and also will remind you to release blade tension when you are finished using the saw. In mounting the signal, set the tension adjustment for the narrowest blade and scribe a vertical line ¼ in. from the sliding block. (This is a Delta 14-in. band saw, but the device can be modified for use on other makes.) Rest the long arm of the signal horizontally on the top of the main casting and locate the hole for the screw hole along the line. Locate the other hole as indicated in the drawing and tap both holes for 8-32 screws. Use two nuts on the 1¼-in. screw, one inside and one outside the blade guard. Attach the signal and paint it a bright color to command attention. △ △




LOCATION OF HOLES FOR MOUNTING SIGNAL

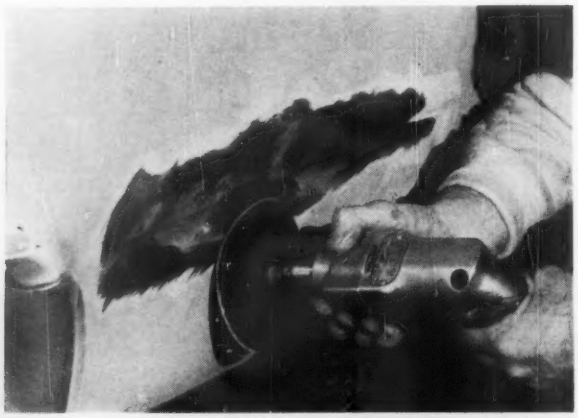
# Auto-Body Repairs With "Glass"

WARNER BENSON

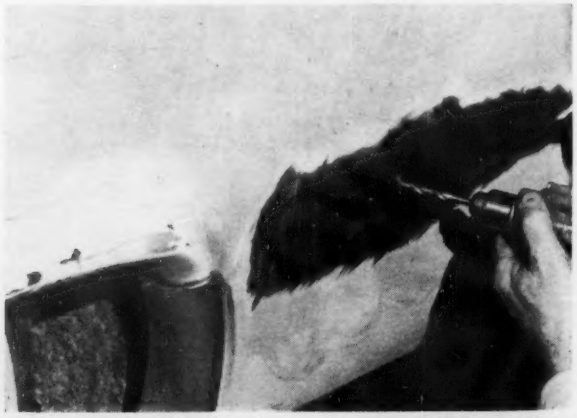


Damage to body panel extends all around dark line of gouge. Use of fiber-glass materials eliminates need for heat and removal of upholstery inside. All work is done from outside the car.

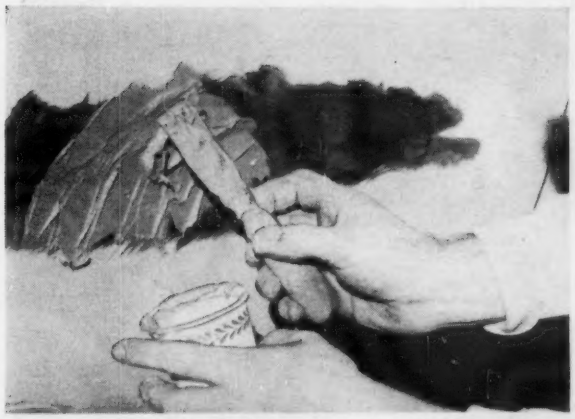
WOODWORKING MIGHT SEEM to be not even remotely similar to making repairs on the sheet metal of an automobile body, but if you have planed and sanded wood to shape, you will have no trouble repairing an auto body with fiber glass and resin. For dents, gouges and small rusted-out areas, a fiber glass "putty" is used. This material is chopped glass fibers mixed with resin, and has the consistency of putty. A liquid catalyst, or hardener, is added to the putty just before application to cause it to set up hard. As little as 20 minutes after application the hardened material can be smoothed with woodworking tools. And it can be feather-edged without chipping or breaking away from the metal. For extensive damage and large rusted-out areas, fiber glass cloth is used to span the damaged areas. In this article is described the repairing of a fairly deep gouge and dent. The material used was TAP Flex-Bond, a fiber glass-resin compound that has extreme flexibility so that it does not crack or loosen when the sheet metal flexes. The Flex-Bond was in an "Old-Pro" kit that also contains fiber-glass cloth and a compound called Wet Weld, that is used to saturate glass cloth when it is stretched over larger damaged areas. Sheet plastic in the kit permits "pre-casting" panels of fiber glass for repairing extensive damage. The photos on these pages show the simple, step-by-step procedure for repairing a gouged body panel. After you apply prime, the last step is to get a professional painter to match the finish on your car.



First step in repairing body is to sand away all paint and rust well beyond damaged area. Flexan disk sander was used for this operation; disk sanders are best for this type of paint removal.



To provide "keys" for fiber-glass patch a staggered line of holes is drilled along edges of deep part of damage. Drill size is not important, can be from about ⅛ to ¼ in., depending on patch size.

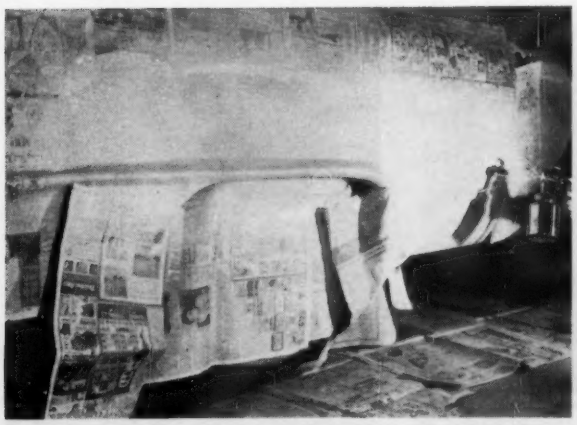


Epoxy-resin putty is mixed with hardener, then applied with putty knife. It is best to wear rubber gloves for this job, as some people get allergy reactions. Note putty is forced into holes.

For preliminary roughing of surface of patch, Stanley Surform hand planer can be used. Planer cuts easily through the hardened fiberglass putty, but simply slides over hard surface of body sheet metal.

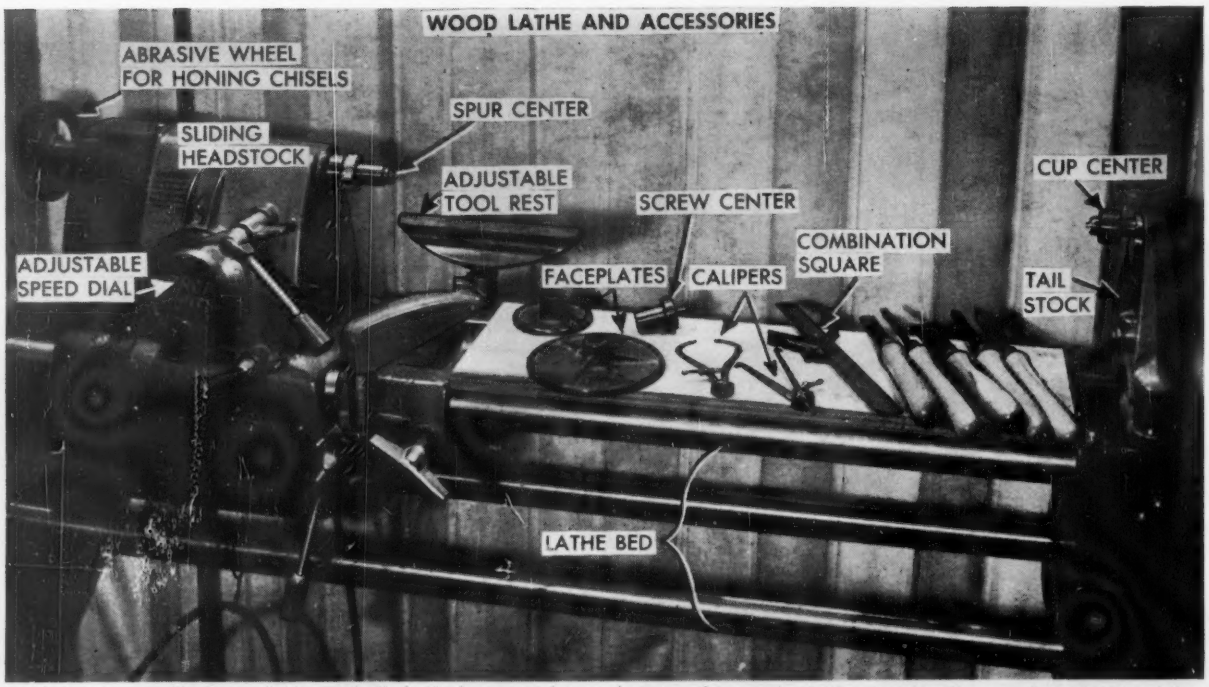
Disk sander next is used, with progressively finer grits to produce smooth, featheredged patch. It is best to do this sanding outside, as resulting fine dust can make a mess of the garage. Dust is non-toxic.

Patch now has been smooth-sanded and featheredged. Low spots have been filled with additional material and resanded, which causes slight color differences. Material bonds completely to itself.

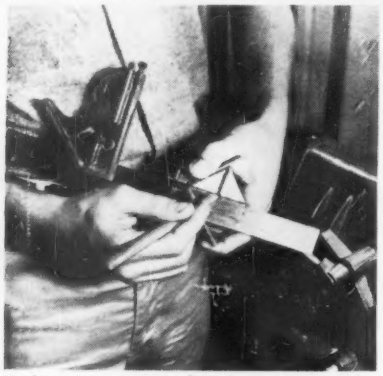


Area around patch is masked with tape and newspapers (in this case other repairs are being primed at the same time) and the repaired panel is sprayed with metal primer as preparation for painting.

Paper and tape are stripped away. Primed area will have to be featheredged, rest of body, or panel, sanded and cleaned to ready it for painting by professional or spray-painting home craftsman.




This lathe is on combination tool (Shopsmith Mark V), but nomenclature of parts and accessories is the same for all types of wood-turning lathes. Additional lathe accessories are available, and advanced lathe operator can obtain them as his work requires. Regular wood lathe would not have grinding wheel, separate grinder would be needed for sharpening chisels.

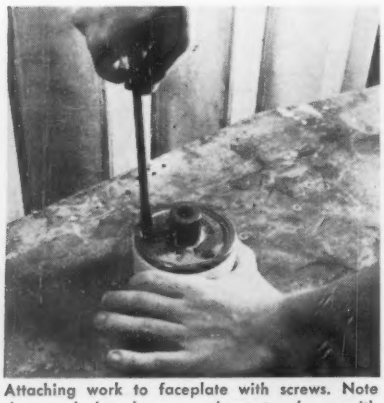


Finding exact center of square or rectangular stock used for spindle turning is important. A 45-deg. fitting on combination square is ideal for this job.

# Wood-Lathe Fundamentals

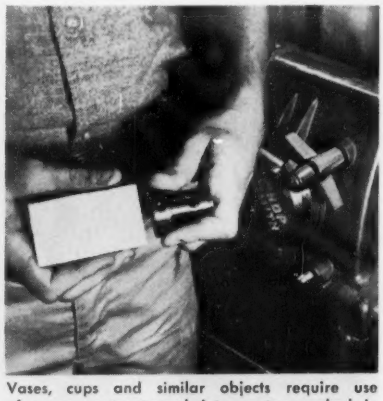
**FRED STEBBINS**

DESCRIBING THE fundamentals of operating a wood lathe is best done with photos, so the text of this article is kept to a minimum. Do not wear a tie when operating a lathe, do not have dangling sleeves nor loose clothing that might be caught in the whirling stock. Do not attempt to wipe rotating work with a cloth. Even long hair can be a hazard, as static electricity built up on the rotating wood can attract it and cause it to be wrapped around the spinning work. Tools must be sharp; a dull chisel is the one that will be hurled from your hand into the ceiling. Do not turn away from rotating work and converse with someone; keep your mind on the job. Go through the photos, step by step, practice what is described and you will be able to do expert work in a short time. △ △

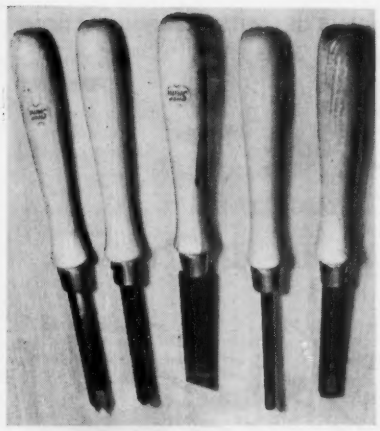


Attaching work to faceplate with screws. Note that work has been rough-cut to shape with jig saw or band saw to save time, eliminate chance of chipping stock.

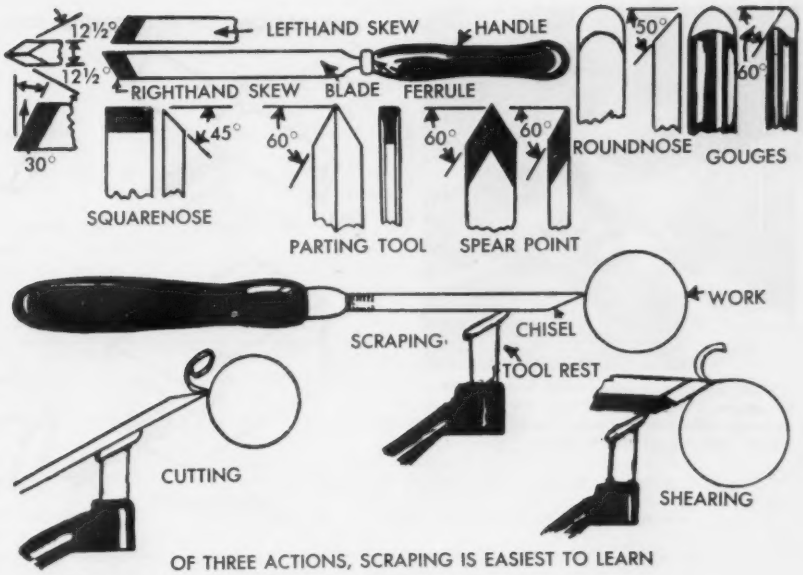
Stock too thin to be screwed to faceplate is cemented to scrap stock that is screwed to faceplate. Sheet of paper between pieces of stock allows quick separation after turning.



Vases, cups and similar objects require use of screw center turned into center marked in stock. Pilot hole is drilled in stock so screw center does not split wood when driven into it.

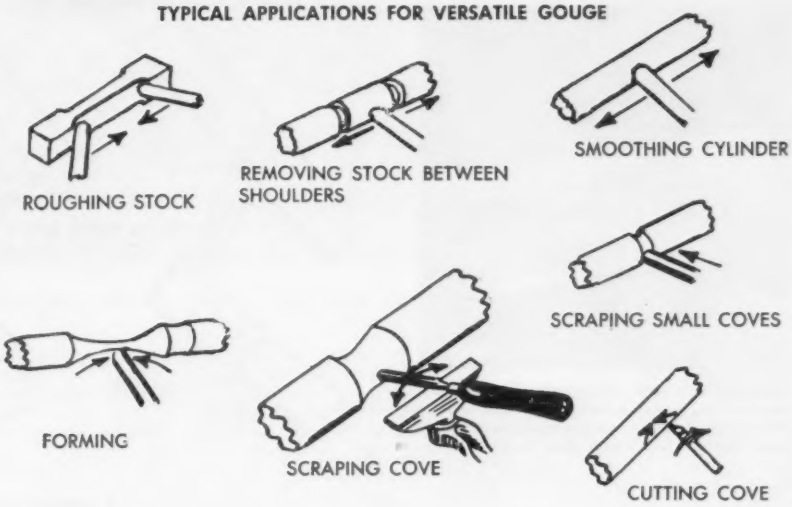


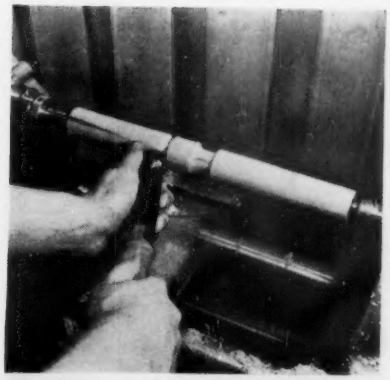
Five common lathe chisels handle almost all turning jobs. Left to right: ¾-in. gouge, ¼-in. gouge, 1-in. skew ½-in. roundnose, ½-in. parting tool. Drawing shows sharpening angles.



Gouge is used for rough-cutting nearly any shape (see drawing) and can be used for nearly all operations. Note position of hands that assures maximum control of the chisel.

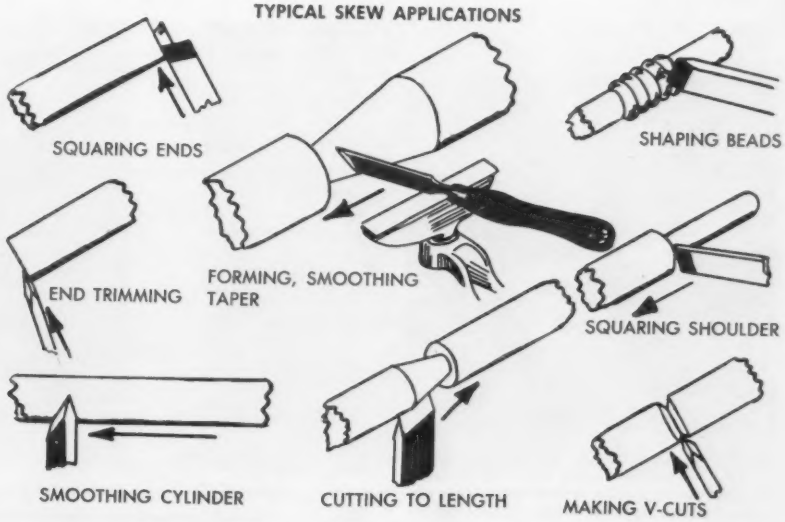
**TYPICAL APPLICATIONS FOR VERSATILE GOUGE**

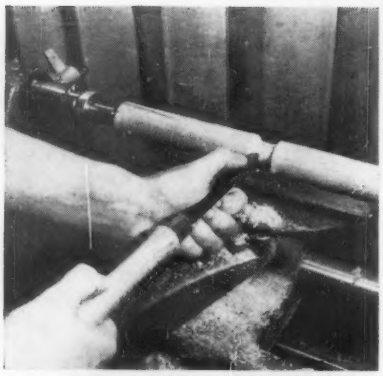


Here skew is used for V-cut. Typical applications of skew are shown in drawing. Note again position of hands that keeps chisel held firmly on the tool rest.

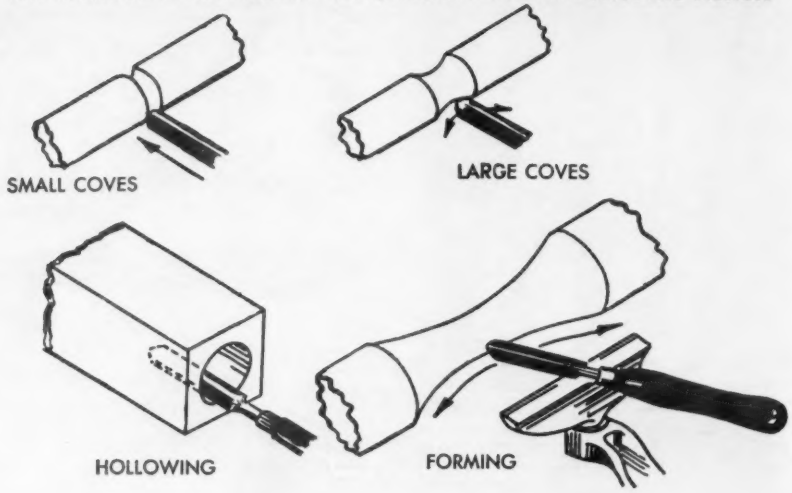
**TYPICAL SKEW APPLICATIONS**

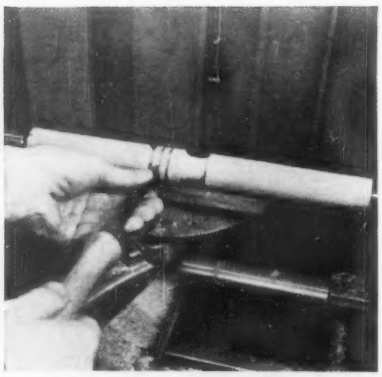




Typical use of roundnose chisel is to cut cove, as shown. Other applications are shown in drawing. This tool is always used in scraping action, easiest operation to learn.

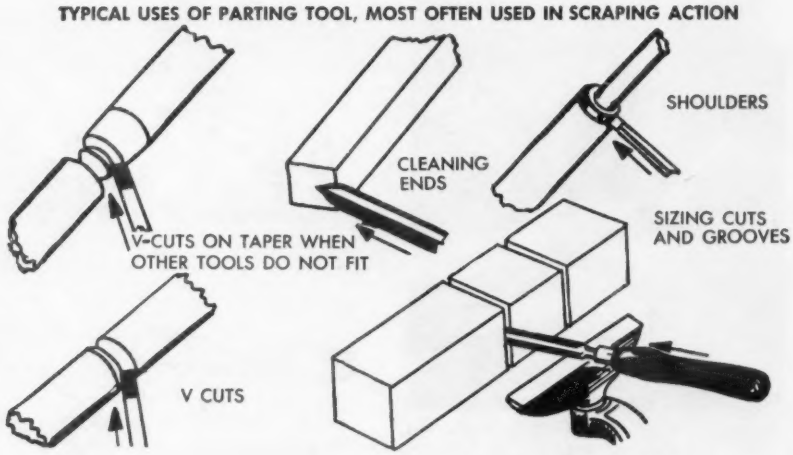
**APPLICATIONS OF ROUNDNOSE TOOL, ALWAYS USE WITH SCRAPING ACTION**

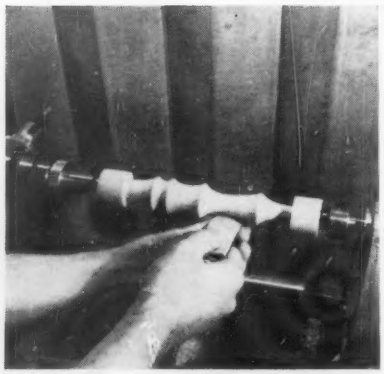


Generally used with scraping action, parting tool here is used to cut grooves in spindle turning. Other typical uses of tool are shown in drawing. Note that tool rest is kept close to work.

**TYPICAL USES OF PARTING TOOL, MOST OFTEN USED IN SCRAPING ACTION**



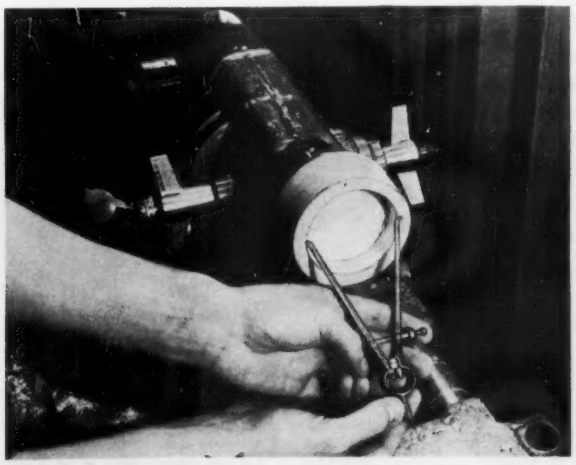
Higher turning speed can be used when work is being sanded for smooth finish, as in speed chart. Use paper folded several times, start with coarse, change to finer. Keep paper moving.

## LATHE-SPEED CHART

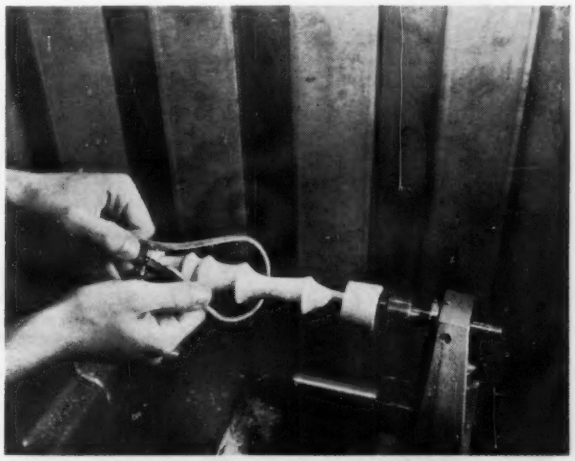
| Material and Diameter | Roughing | Shaping | Finishing |
|---|---|---|---|
| Wood to 2 in. | 910 rpm | 2590 rpm | 4250 rpm |
| Wood 2 to 4 in. | 810 rpm | 2375 rpm | 3380 rpm |
| Wood 4 to 6 in. | 650 rpm | 1825 rpm | 2375 rpm |
| Wood 6 to 8 in. | 650 rpm | 1200 rpm | 1825 rpm |
| Wood 8 to 10 in. | 650 rpm | 910 rpm | 1025 rpm |
| Wood over 10 in. | 650 rpm | 650 rpm | 650 rpm |
| Plastics to 3 in. | 2200 rpm | 3125 rpm | 3875 rpm |
| Plastics over 3 in. | 1025 rpm | 1200 rpm | 1680 rpm |
| Nonferrous metals up to 3 in. (carbide-tipped tools) | 650 rpm | 1300 rpm | 3125 rpm |

## TROUBLE CHART

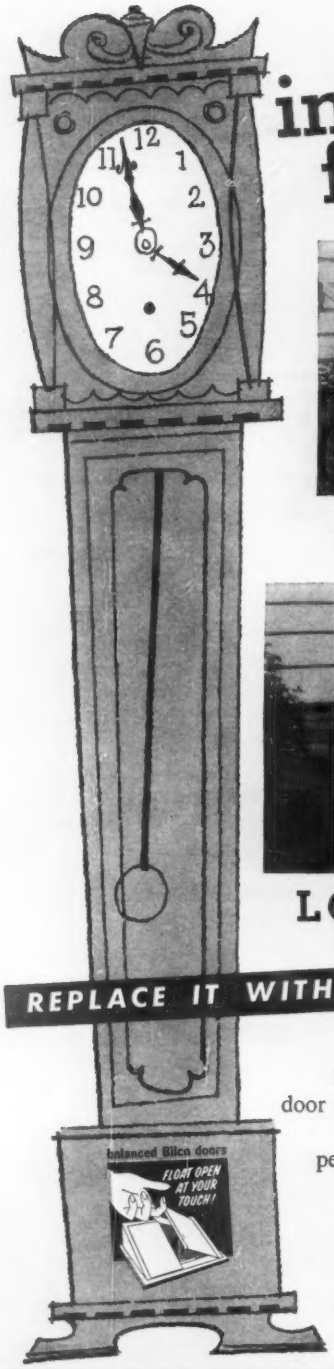
| Problem | Causes | Suggested Cure |
|---|---|---|
| Work burns at cup center at tailstock | Excessive friction | Slack off cup center on tailstock<br>Lubricate cup center with oil, tallow, soap<br>Use live cup center |
| Vibration | Too high a speed for large work<br>Work not on true center | Slow down<br>Established correct centers (often vibration will stop when true round is obtained) |
| Work chatters | Excessive speed | Slow down |
| Lathe chisel hard to hold | Tool is dull<br>Cutting too deep, cutting too fast<br>Work is loose between centers<br>Work is loose on faceplate<br>Poor support for chisel | Hone<br>Feed slower and take moderate bite<br>Tighten either at headstock or tailstock handwheel<br>Tighten or replace screws<br>Restudy photos and diagrams to maintain ideal support |
| Work stops when tool is applied | Spur center not seated correctly<br>Spur chews away material | Cut diagonals for spur—especially on hardwoods<br>Remove from lathe, remove as much of the bad end as necessary, reset spur |
| Scored lines left from sandpapering | Went from very coarse to fine<br>Sandpaper held in one spot | Work progressively from coarse to fine paper<br>Keep paper moving |
| Cannot get glass-smooth finish | Nap on wood raises | Reverse work on centers for final sanding<br>Use damp cloth on work before final sanding |
| Excessive vibration and chatter on faceplate work | High speed<br>Stock not centered<br>Mounting screws loose | Slow down<br>Reattach if necessary, cut off corners to make round<br>Check and tighten immediately or try larger screws |
| Wood splinters when rough turning | Starting cut made at end<br>Typical of roughing cut | Start in middle and work to ends<br>Remove as much waste material as possible before turning |
| Burns from sanding | Too much pressure<br>Too much speed | Use lighter touch<br>Slow down |
| Work loosens on screw center | Very soft wood<br>Wrong use of screw center | Make sure screw is tight, then make lighter cuts<br>Perhaps work should be mounted on faceplate or even between centers |



**Measurements are unnecessary for a freehand turning, but when duplicates are to be made, instruments such as these inside calipers are required to be sure of identical dimensions.**

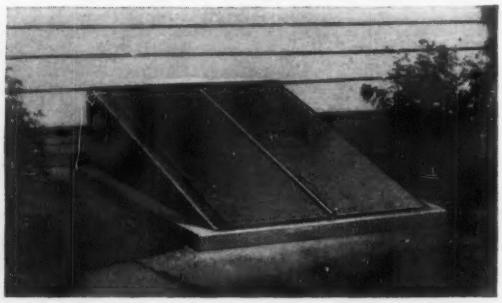


**Tool used for checking outside measurements of a turning when duplicating a part, or turning to match a drawing or blueprint, is set of outside calipers, shown here in use.**




# in just a few hours...

## you can make this



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**New Haven 5, Conn.**
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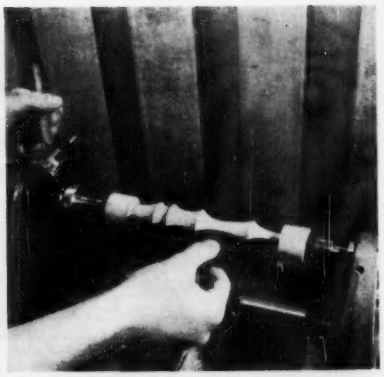
CITY _____ ZONE ___ STATE _____

When duplicate pieces are to be made, easiest way of assuring uniformity is to make a template from scrap of hardboard (Masonite) to check against work.

Rule is useful tool for lathe work, here is being used for marking stock for rough-turning. Although pencil marks are made only at one spot, when work is rotated the marks will appear to completely around work.

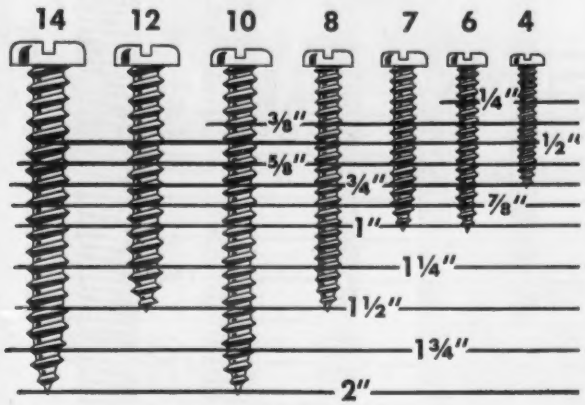
Here heavy pencil is used to mark faceplate turning. Tool rest is moved close to face for this job. Rule held on tool rest permits work to be pencil-marked while it is rotating. Duplicate jobs are marked in same way.

## Tapping Screws

## TYPE "A"

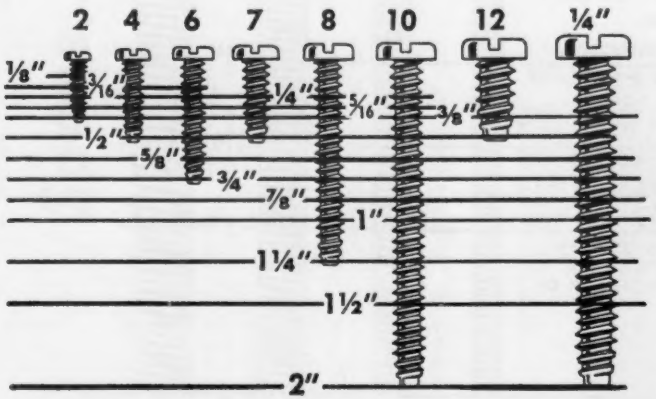
**RECOMMENDED FOR FASTENING AND JOINING**

**LIGHT METAL SHEETS UP TO AND INCLUDING NO. 18 GA.**




## Type "B"

**RECOMMENDED FOR HEAVIER METAL SHEETS UP TO AND INCLUDING NO. 6 GA. CAN ALSO BE USED IN DIE CASTINGS**




### HOLE SIZES FOR TYPE "A" SHEET METAL SCREWS

| DIAM. OF SCREW Subject to Commercial Tolerances | Thickness of Metal | | Pierced Hole | Drilled or Clean-punched Hole | |
|---|---|---|---|---|---|
| | Number of Gauge (U.S. Std.) | Thick. in Dec. Pts. of an Inch | Diam. of Hole Req'd | Diam. of Hole Req'd | Drill Size |
| No. 4 .112 in. | No. 28 | .015" | .086" | .086" | No. 44 |
| | No. 26 | .018" | .086" | .086" | No. 44 |
| | No. 24 | .025" | .093" | .093" | No. 42 |
| | No. 22 | .031" | .098" | .093" | No. 42 |
| | No. 20 | .037" | .100" | .098" | No. 40 |
| No. 6 .138 in. | No. 28 | .015" | .111" | .099" | No. 39 |
| | No. 26 | .018" | .111" | .099" | No. 39 |
| | No. 24 | .025" | .111" | .099" | No. 39 |
| | No. 22 | .031" | .111" | .101" | No. 38 |
| | No. 20 | .037" | .111" | .106" | No. 36 |
| No. 7 .155 in. | No. 28 | .015" | .121" | .104" | No. 37 |
| | No. 26 | .018" | .121" | .104" | No. 37 |
| | No. 24 | .025" | .121" | .110" | No. 35 |
| | No. 22 | .031" | .121" | .113" | No. 33 |
| | No. 20 | .037" | .121" | .116" | No. 32 |
| | No. 18 | .050" | | .120" | No. 31 |
| No. 8 .165 in. | No. 26 | .018" | .137" | .113" | No. 33 |
| | No. 24 | .025" | .137" | .113" | No. 33 |
| | No. 22 | .031" | .137" | .116" | No. 32 |
| | No. 20 | .037" | .137" | .120" | No. 31 |
| | No. 18 | .050" | | .128" | No. 30 |
| No. 10 .191 in. | No. 26 | .018" | .158" | .128" | No. 30 |
| | No. 24 | .025" | .158" | .128" | No. 30 |
| | No. 22 | .031" | .158" | .128" | No. 30 |
| | No. 20 | .037" | .158" | .136" | No. 29 |
| | No. 18 | .050" | .158" | .149" | No. 25 |
| No. 12 .218 in. | No. 24 | .025" | | .147" | No. 26 |
| | No. 22 | .031" | .185" | .149" | No. 25 |
| | No. 20 | .037" | .185" | .152" | No. 24 |
| | No. 18 | .050" | .185" | .157" | No. 22 |
| No. 14 .251 in. | No. 24 | .025" | | .180" | No. 15 |
| | No. 22 | .031" | .212" | .189" | No. 12 |
| | No. 20 | .037" | .212" | .191" | No. 11 |
| | No. 18 | .050" | .212" | .196" | No. 9 |

CUT OUT THIS SHEET and fold it in half to form booklet for ready reference in your shop. There will be more pages of this kind in future issues of WORKBENCH, and a collection of these sheets will form a handy booklet that eventually will contain a wide variety of information and facts of value to every home craftsman.

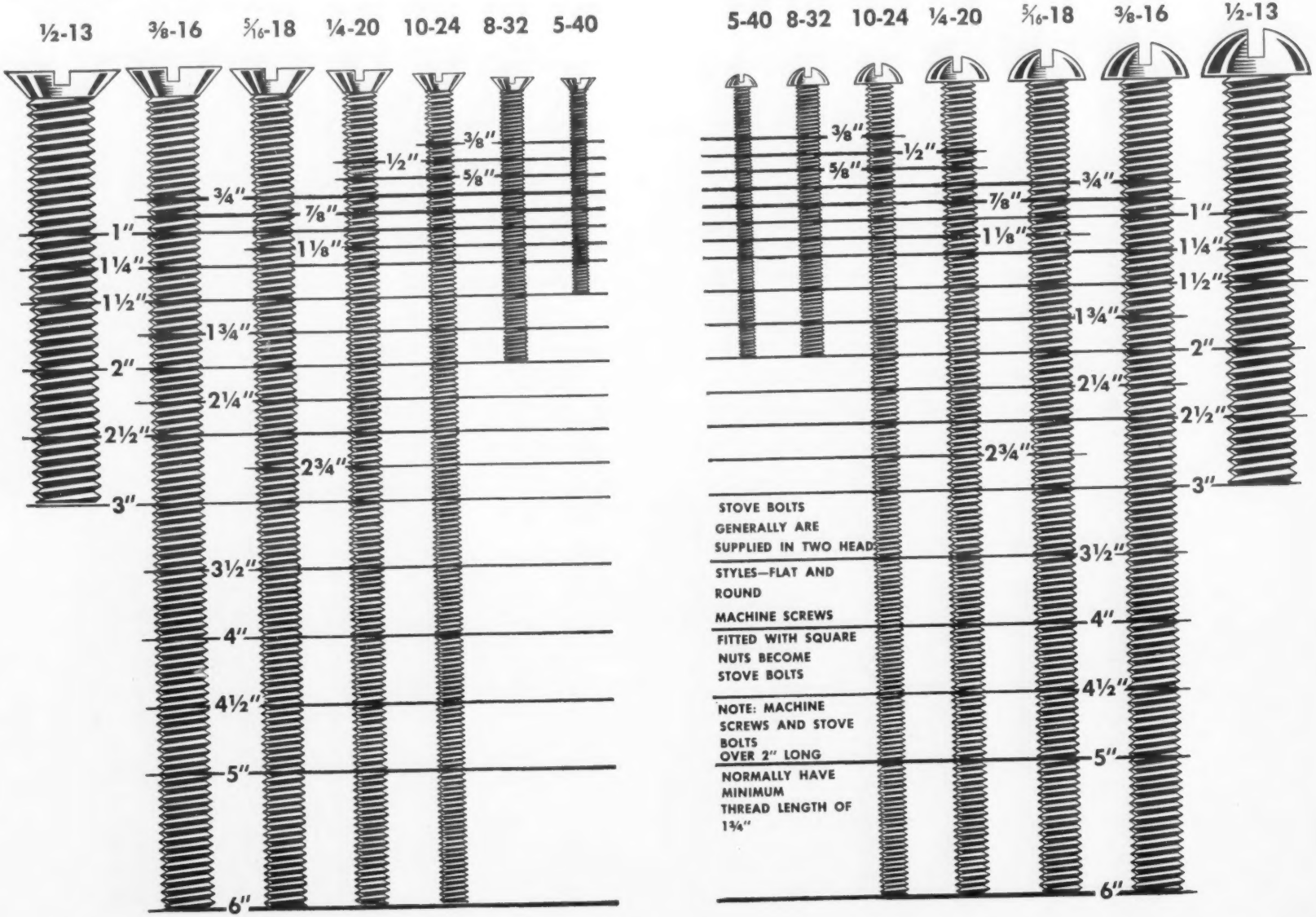
Not illustrated on these pages is the fact that the length of a flat-head screw is measured from the screw tip to the top of the flat head, while the length of a roundhead screw is measured from the tip to the flat underside of the head. Lengths of oval-head screws are measured from the tip to the line between the curve of the oval head, and the angle of the portion that is countersunk.

### HOLE SIZES RECOMMENDED FOR TYPE "B" SHEET METAL SCREWS

| DIAM. OF SCREW Subject to Commercial Tolerances | Thickness of Metal | | Pierced Hole | Drilled or Clean-punched Hole | |
|---|---|---|---|---|---|
| | Number of Gauge (U.S. Std.) | Thick. in Dec. Pts. of an In. | Diam. of Hole Req'd | Diam. of Hole Req'd | Drill Size |
| No. 2 .086 in. | No. 28 | .015" | — | .063" | No. 52 |
| | No. 26 | .018" | — | .063" | No. 52 |
| | No. 24 | .025" | — | .067" | No. 51 |
| | No. 22 | .031" | — | .070" | No. 50 |
| | No. 20 | .037" | — | .073" | No. 49 |
| | No. 18 | .050" | — | .073" | No. 49 |
| | No. 16 | .062" | — | .076" | No. 48 |
| No. 4 .112 in. | No. 28 | .015" | .086" | .086" | No. 44 |
| | No. 26 | .018" | .086" | .086" | No. 44 |
| | No. 24 | .025" | .092" | .089" | No. 43 |
| | No. 22 | .031" | .098" | .093" | No. 42 |
| | No. 20 | .037" | .100" | .093" | No. 42 |
| | No. 18 | .050" | — | .096" | No. 41 |
| | No. 16 | .062" | — | .099" | No. 39 |
| | No. 14 | .078" | — | .101" | No. 38 |
| No. 6 .137 in. | No. 28 | .015" | .106" | .104" | No. 37 |
| | No. 26 | .018" | .106" | .104" | No. 37 |
| | No. 24 | .025" | .106" | .106" | No. 36 |
| | No. 22 | .031" | .110" | .106" | No. 36 |
| | No. 20 | .037" | .110" | .110" | No. 35 |
| | No. 18 | .050" | — | .111" | No. 34 |
| | No. 16 | .062" | — | .116" | No. 32 |
| | No. 14 | .078" | — | .120" | No. 31 |
| | No. 12 | .109" | — | .128" | No. 30 |
| No. 7 .151 in. | No. 26 | .018" | .121" | .116" | No. 32 |
| | No. 24 | .025" | .121" | .116" | No. 32 |
| | No. 22 | .031" | .121" | .116" | No. 32 |
| | No. 20 | .037" | .121" | .116" | No. 32 |
| | No. 18 | .050" | .121" | .120" | No. 31 |
| | No. 14 | .062" | — | .128" | No. 30 |
| | No. 14 | .078" | — | .136" | No. 29 |
| | No. 12 | .109" | — | .140" | No. 28 |
| No. 8 .163 in. | No. 26 | .018" | .131" | | |
| | No. 24 | .025" | .131" | .116" | No. 32 |
| | No. 22 | .031" | .131" | .116" | No. 32 |
| | No. 20 | .037" | .136" | .116" | No. 32 |
| | No. 18 | .050" | .140" | .128" | No. 30 |
| | No. 16 | .062" | — | .136" | No. 29 |
| | No. 14 | .078" | — | .140" | No. 28 |
| | No. 12 | .109" | — | .149" | No. 25 |
| | 1/8" | .125" | — | .149" | No. 25 |
| | No. 10 | .140" | — | .152" | No. 24 |
| No. 10 .186 in. | No. 26 | .018" | .144" | .144" | No. 27 |
| | No. 24 | .025" | .144" | .144" | No. 27 |
| | No. 22 | .031" | .144" | .144" | No. 27 |
| | No. 20 | .037" | .147" | .144" | No. 27 |
| | No. 18 | .050" | .155" | .144" | No. 27 |
| | No. 16 | .062" | — | .152" | No. 24 |
| | No. 14 | .078" | — | .157" | No. 22 |
| | No. 12 | .109" | — | .161" | No. 20 |
| | 1/8" | .125" | — | .169" | No. 18 |
| | No. 10 | .140" | — | .169" | No. 18 |
| | No. 8 | .171" | — | .173" | No. 17 |
| No. 12 .212 in. | No. 24 | .025" | .185" | .166" | No. 19 |
| | No. 22 | .031" | .185" | .166" | No. 19 |
| | No. 20 | .037" | .185" | .166" | No. 19 |
| | No. 18 | .050" | .185" | .169" | No. 18 |
| | No. 16 | .062" | — | .177" | No. 16 |
| | No. 14 | .078" | — | .182" | No. 14 |
| | No. 12 | .109" | — | .185" | No. 13 |
| | 1/8" | .125" | — | .196" | No. 9 |
| | No. 10 | .140" | — | .196" | No. 9 |
| | No. 8 | .171" | — | .201" | No. 7 |
| No. 14 .243 in. | No. 22 | .031" | .209" | .185" | No. 13 |
| | No. 20 | .037" | .209" | .185" | No. 13 |
| | No. 18 | .050" | .209" | .191" | No. 11 |
| | No. 16 | .062" | — | .199" | No. 8 |
| | No. 14 | .078" | — | .204" | No. 6 |
| | No. 12 | .109" | — | .209" | No. 4 |
| | 1/8" | .125" | — | .228" | No. 1 |
| | No. 10 | .140" | — | .228" | No. 1 |
| | No. 8 | .171" | — | .234" | 15/64" |
| | 3/16" | .187" | — | .234" | 15/64" |
| | No. 6 | .203" | — | .234" | 15/64" |

## Machine Screws

*Information Courtesy American Screw Co.*



# Lazy Susan Space Saver

CLUTTERED KITCHEN CABINETS, Fig. 1, are space wasters and it is difficult to find a particular item. Amerock Turn-A-Shelf hardware was one homeowner's solution to the problem. The center shelf was removed, Fig. 2, and the drawer above also was temporarily taken out. A crosspiece was needed for fastening the upper bracket, which was centered in the cabinet. The nylon bearing then was centered in the bottom of the cabinet, the steel column was cut to the described length and the complete unit next was checked for level, Fig. 3. The two circular metal shelves then were installed and spaced on the column for canned goods, Fig. 4. The shelves can be adjusted to handle the height of almost any item stored in a kitchen cabinet. Many of the items formerly stored on the cabinet shelves fitted in the corners of the cabinet around the circular shelves. If you prefer to cut circular shelves from wood, the Turn-A-Shelf hardware is available without the metal circular shelves. △ △

FIG. 1. Cluttered kitchen cabinets like this one waste space and it is difficult to find any particular item or utensil readily.

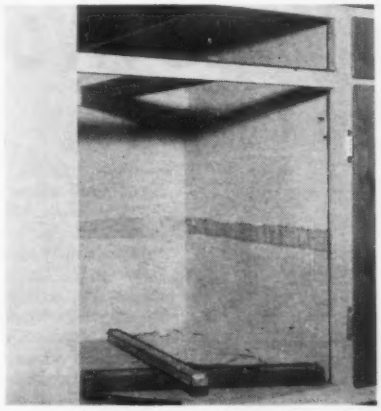


FIG. 2. Shelf is removed, drawer above taken out temporarily. Wooden crosspiece under drawer runners had to be installed.

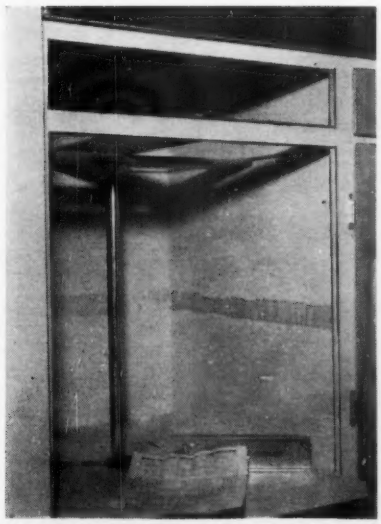


FIG. 3. Upper bracket is installed, column cut to length and lower bearing fitted on it. Column is plumbed, bearing fastened with screws.

FIG. 4. Shelves are clamped on column to complete installation. They can be located anywhere on column to accommodate various items.


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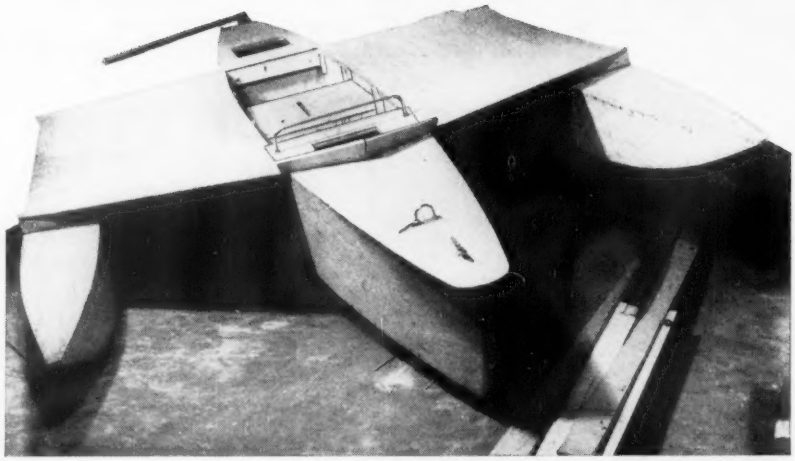
FIG. 1. Main hull and floats are completely assembled in this photo of the Frolic under construction. Note tapered underside of crossbeams, overhang of bow deck. Your boat should be in this stage after following through this part.



CONSTRUCTION OF *Frolic* will be described in this and one more issue of WORKBENCH. For those who want to build the boat more quickly, full-size plans are available from the designer, Pi-Craft, 344 Sacramento St., San Francisco 11, Calif., for $15. Included are complete instructions, economy tips and detailed methods of making your own set of sails with an ordinary home sewing machine.

# BUILDING "FROLIC"

**SCOTT MORGAN**

*Designed by Arthur Piver*

AFTER INSTALLING the daggerboard case, as in part I, you can fit and fasten the fore and aft foot-well decks, center cockpit deck and topside planking. Foot-well framing is nailed to the planking first, then installed permanently between frames 3 and 4, and 5 and 6, before fastening topside planking, Fig. 2. Both foot-well decks are ½ in. low on the ends nearest the daggerboard case, and drain into it through holes in the ends of the case. These decks have a ½ x ¾-in. support at all sides and ends and a central ¾ x ¾-in. support down the center. A vertical piece ¾ in. square is nailed and glued vertically between the keel and the center support under each deck. Before fastening topside planking (upper side), the metal bracket connecting the stem to the deck and deck cleat is installed, with a ½-in. plywood doubler to fill the triangular space between frame 1 and the stem, detail A, Fig. 13. The open-base cleat permits the jib stay to be attached to the eye of the cleat, yet allows an anchor or bow line to be secured. As the nuts holding the cleat bolts cannot be reached after the deck is on, the plywood doubler and deck are "dry-fitted" in place—note that the deck overhangs the bow 42 in. back, Figs. 1 and 15—and two holes for the cleat are drilled. Mark the deck so it can be replaced in exactly the same position, then remove it, make the metal bracket as in detail A, Fig. 13 and bolt bracket and cleat in place. Coat the nuts and an adjacent area with a fiberglass compound, such as "TAP Flex Bond" to "weld" them in place, then remove the cleat when the compound hardens. The same method is used when fastening the eye straps for the main-boom traveler rope.

Next, the sheer stringers, chine stringers and outboard-facing sides of the foot well and daggerboard-support strips are faired to take the topside planking, Fig. 3. The latter overlaps the bottom planking and is flush with the tops of the sheer stringers when they, in turn,

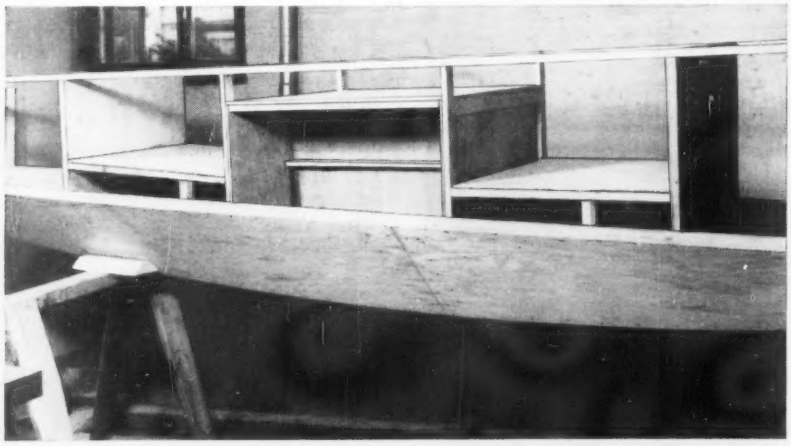


FIG. 2. Foot-well framing and decking is installed between frames 3 and 4 and 5 and 6, also deck over daggerboard case. Nailing strips have been glued and nailed to underside of decking.

FIG. 3. Batten is used to check fairing of sheer and chine stringers. Plane and orbital sander used to dress surfaces to alignment.

are faired to take deck planking. When the glue has dried, saw the forward edges of the planking flush with the forward edge of the stem and install a triangular-shape strip across the stem and plywood edges, Fig. 4. Triangular-shape backing blocks for fastening the jib traveler are cut from ½-in. plywood and nailed to bulkhead 3 and the stringers on each side, detail B, Fig. 13. Triangles measure 8 in. on a side. Crossbeams now are reduced to their finished dimensions, detail C, Fig. 8, and notches are cut in the side planking so the tops of the beams are flush with the top surfaces of the sheer stringers. Foot-well ends of the decking must cover the beams, Figs. 11 and 12. Wooden strips ¾ x ¾ in. reinforce the hull planking at the crossbeam notches, Fig. 13, and provide gluing surfaces for the beams. Four ⅜-in. bolts also hold the beams in place. Do not attach the beams permanently until the boat is taken outside. The last step before fastening the deck is to cut and fit the perforated-hardboard floor boards for the compartments under the bow and stern hatches, Fig. 5. The after end of the stern-compartment floorboard rests on the bottom nailing strip of frame 7. A ½-in. strip is nailed level with it on frame 6 to support the forward end. The floorboard for the forward compartment is fitted the same. Headless aluminum nails driven into the support strips and allowed to project about ¼ in. into perforations in the board hold it in place.

Now, backing blocks ¾ x 1⅝ in. are nailed and glued to the inside of frame 8 next to the top and bottom gluing strips to accept screws used to fasten rudder gudgeons, detail A, Fig. 16. Carefully "dry-fit" the decking, then remove and cut hatches and attach wood and aluminum strips. Hatch covers of ¼-in. plywood are held in place with rubber bands, Fig. 14. When attaching the deck, do not apply glue over the crossbeams. A 12-in. slot now is cut in the deck over the daggerboard case and the daggerboard is cut and assembled, Fig. 16.

Building the outrigger floats starts with the cutting from ¼-in. plywood the bottom, top and sides of one float. These parts then are used as patterns to mark duplicate pieces for the second float. Figs. 6 through 10 detail the manner of constructing the floats. To make it easier to spring the sides into curves, ⅜-in.-deep saw kerfs are made in the stringers, Figs. 8 and 10. After the sides are attached to the top, and before the glue sets, a spreader is fitted between the bottom stringers 20 in. from the bow, as in details A and B, Fig. 8. Just one bulkhead is installed in each float, after installing the spreaders. After assembling the top, sides and bottom of the floats, ¾-in.-sq. strips are glued and nailed to the aft ends and a transom cut from ¼-in. plywood

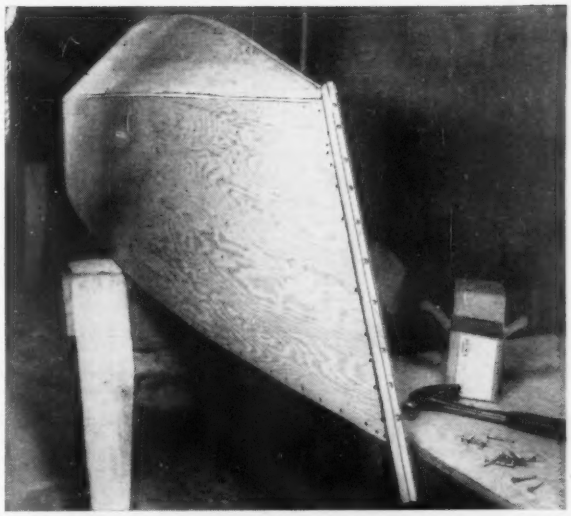


FIG. 4. Edges of side planking at bow are covered with triangular-shape strip of mahogany nailed and glued across stem as shown.

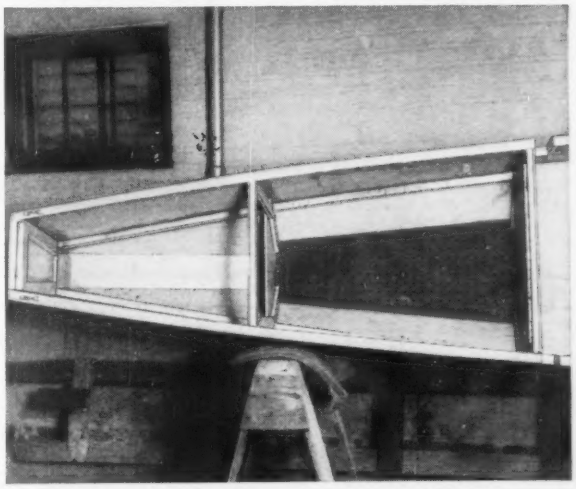


FIG. 5. Perforated hardboard cut to fit area on level with bottom nailing strips of frames 6 and 7 provides well-ventilated floor under hatch.

FIG. 6. Curved sections of float planking are outlined to take fair curve by springing long batten around nails driven at control points.

FIG. 7. Backing block and joint area of float planking are coated with glue, then fastened together. Nails are driven from outside of planking.

FIG. 8

FLOAT CONSTRUCTION

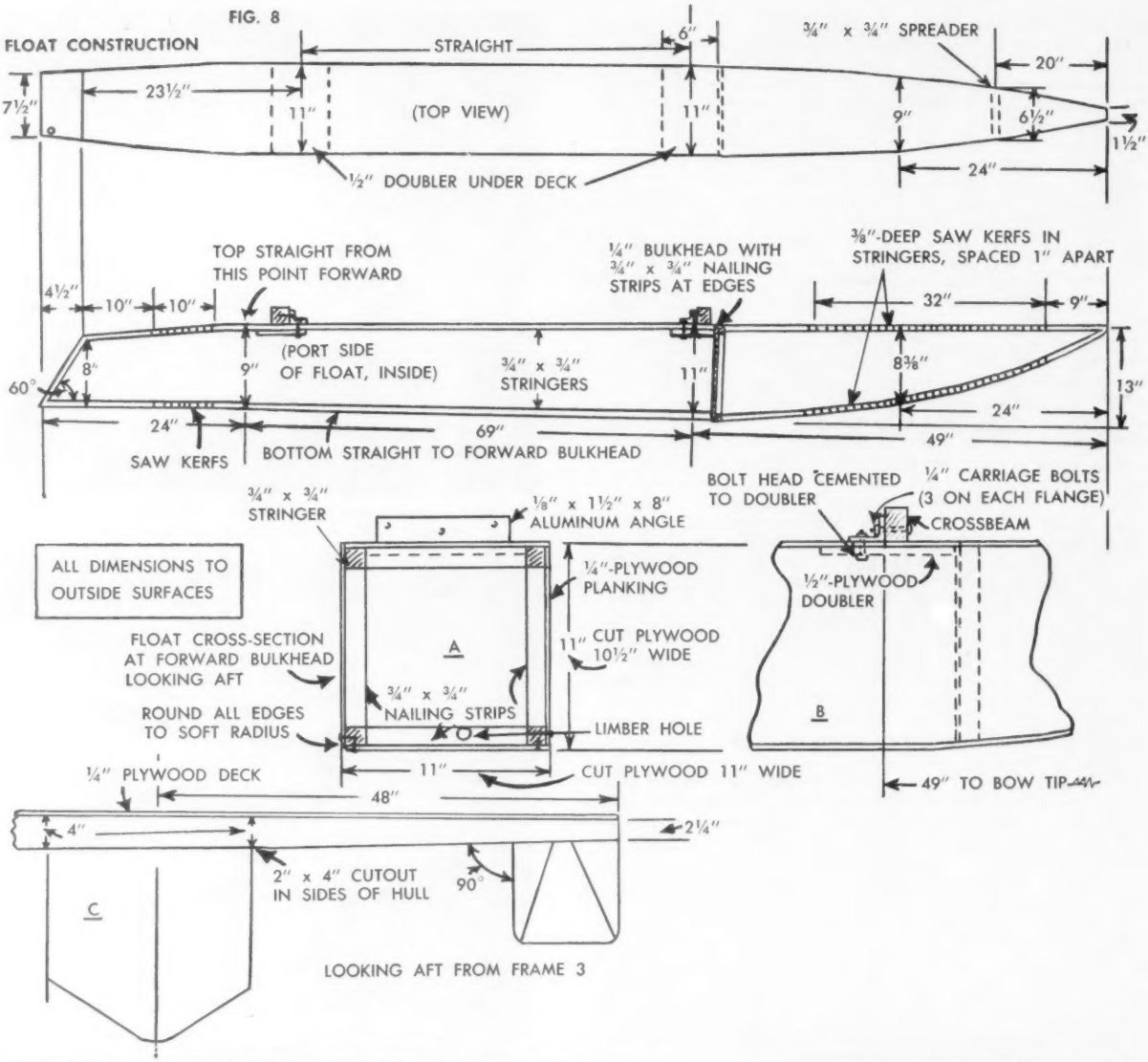


FIG. 9. Float stringers are glued and nailed to side planking flush with edges, starting at bow end and working aft. Planking is held, stringer moved against it.

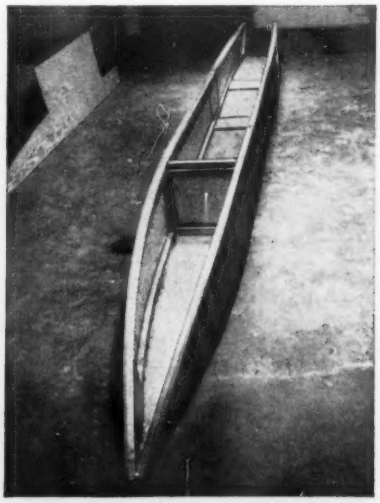


FIG. 10. Float sides are nailed to top, bulkhead is in position. Bottom and transom are next.

is fastened at a 60-deg. angle. A drain plug is fitted in each transom near the bottom,

When both floats have been completed, the crossbeams are drilled for the bolts that fasten them to the aluminum angles on the floats. To do this accurately, the floats are placed on a flat surface in the position they assume when assembled on the boat. This requires the outboard edges of the floats to be tilted slightly to bring the float decks flush with the tapered undersides of the beams. The beams then are clamped to the angles, the ends being flush with the float sides, and the holes are drilled through the beams. Holes in the angles are drilled previously. Then the beams are slipped into place in their notches and centered on the main hull, after which the side decks are cut and fastened temporarily, as shown in the drawings in Part I, and in Figs. 1 and 12 in this part. The inboard edges of the decks come flush with the inside faces of the sheer stringers; outboard edges are notched so that the crossbeam ends project ¾ in. from them. The after edges of the side decks are cut flush with the after sides of the beams; forward edges are cut at an angle to provide sufficient clearance between the stopwater, or coaming, and forward hatch, the stopwater sides being in line with the leading, angled edges of the side decks. Stopwater construction is given in detail B, Fig. 13. The sides are joined together by means of a miter joint with headless nails (heads cut off annular ring aluminum nails) and glued and fastened to the deck with headless nails and a liberal application of polyester resin.

The jib club deck fitting may be made by bolting a ¼-in. U-bolt to the fore deck as shown in Fig. 1, or by the method shown in Fig. 13. In the former case a length of wood or rod is taped to a socket wrench so

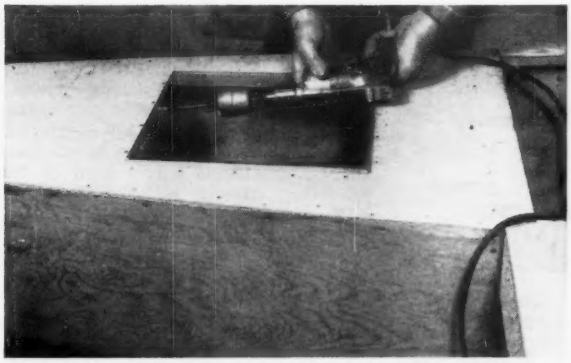


FIG. 11. Screwdriver attachment in electric drill makes fast work of driving screws through aluminum strips that are fitted to hatchway sides and ends. Flathead screws are countersunk in metal.

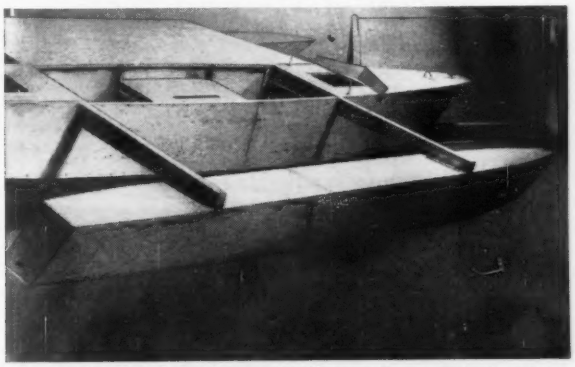


FIG. 12. Floats are first "dry-assembled" on crosbeams to check positioning and parallel alignment with each other and with main hull. Port side deck is in position here, starboard deck has not been installed.

FIG. 13

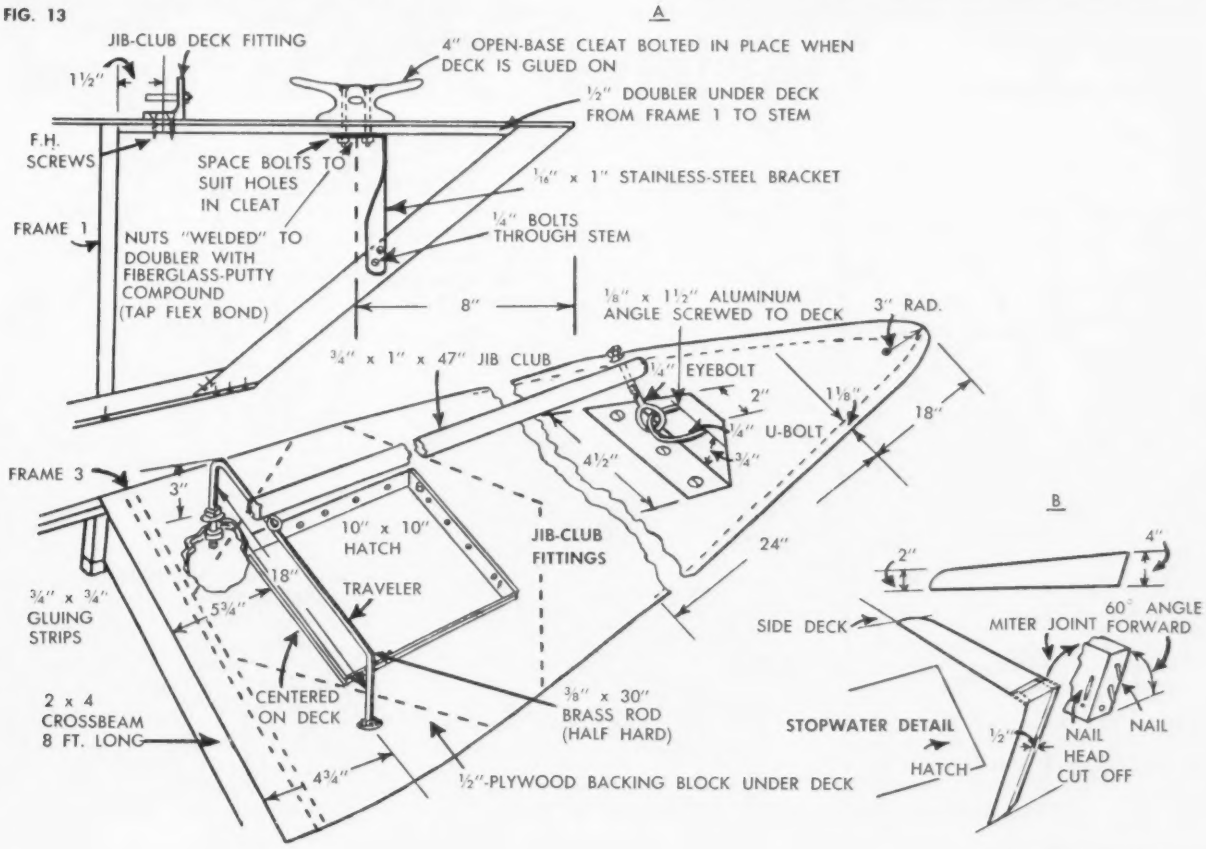
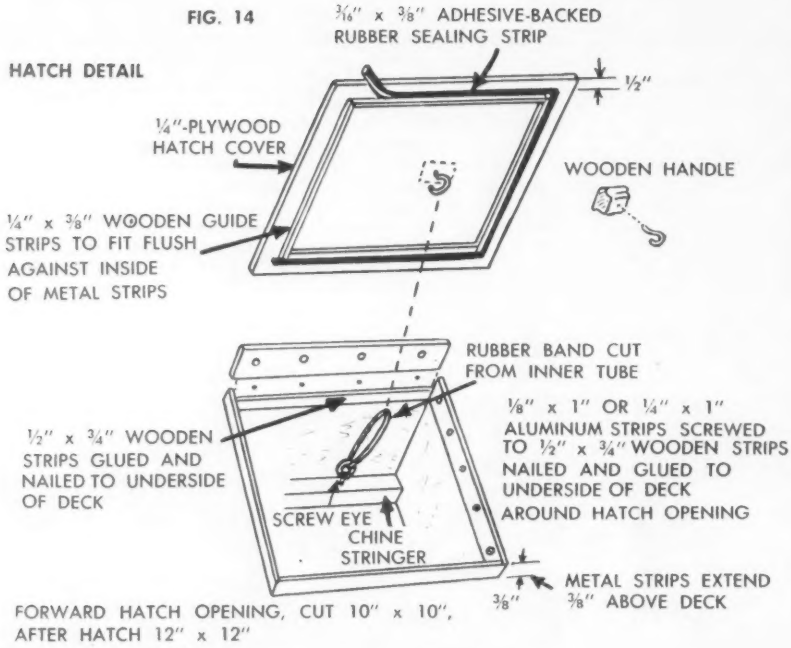


FIG. 14

HATCH DETAIL



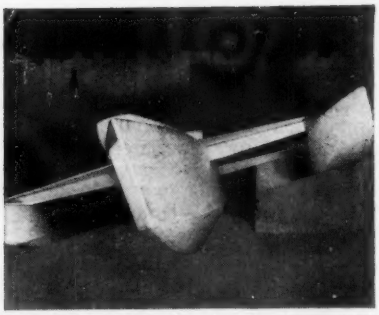



FIG. 15. This view of underside of completed boat shows clearly relative depths of hull and floats, slight angle of floats resulting from taper of crossbeams. At this point your boat is almost finished, ready for finishing.

that the U-bolt nuts can be turned. In the latter case, Fig. 13, an aluminum angle is drilled and cut to the dimensions given and screwed to the deck and doubler 1½ in. forward of frame 1.

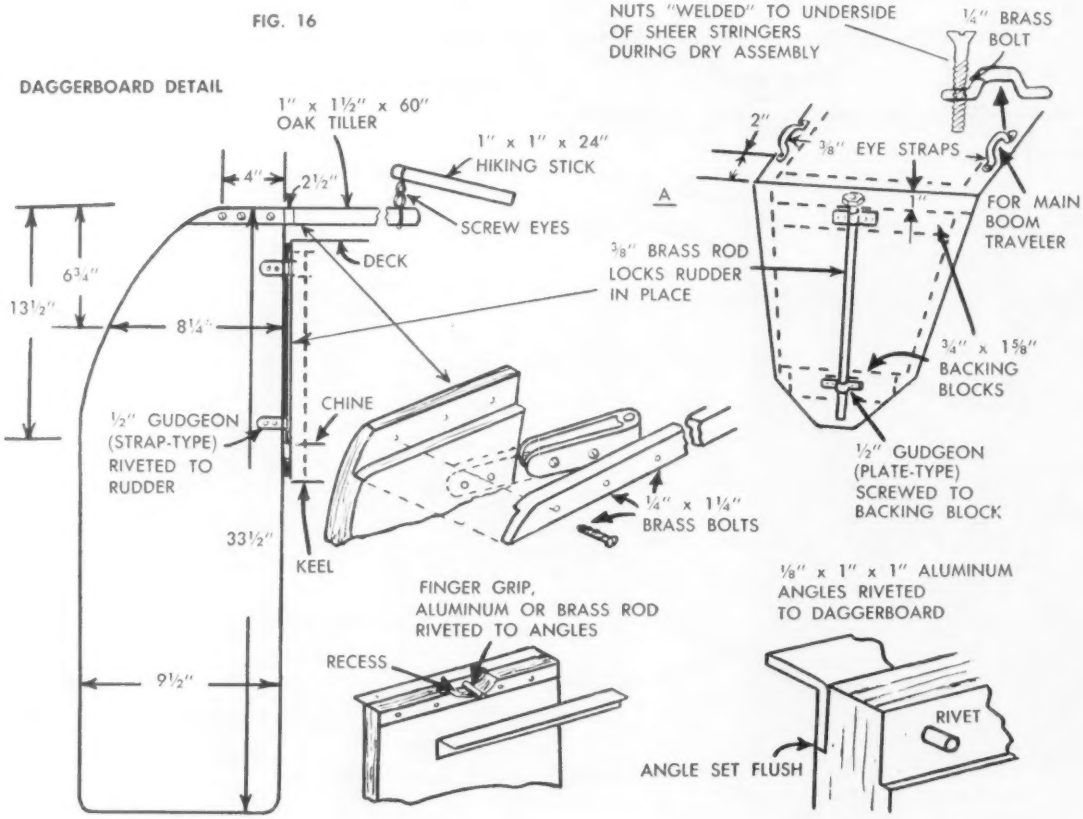
The jib traveler, bent from a 30-in. length of ⅜-in. half-hard brass rod, is bolted to the deck in the position shown. Do not apply heat when making the right-angle bends, as shaping the metal at the wrong temperature may crystallize and weaken it. A standard ⅜-16 thread is cut on each end of the traveler, after it is bent to shape. Allow enough thread length to include a nut and washer on top of the deck and a nut on the underside of the backing block under the deck.

This completes construction of the boat. The mast, rigging, sail making, outboard-motor mounting detail, fiberglassing and finishing will be given in the next, concluding part.

(In the list of materials, Part I, the 8 lb. of 1-in.-long Stronghold nails should be changed to 20 lb.) △ △

FIG. 16

DAGGERBOARD DETAIL



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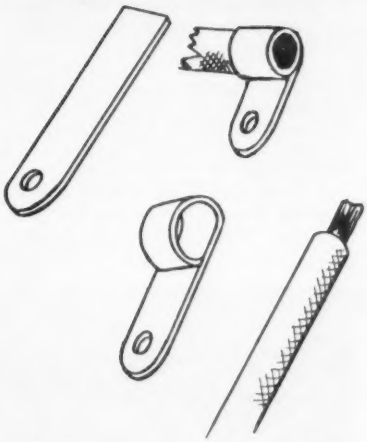
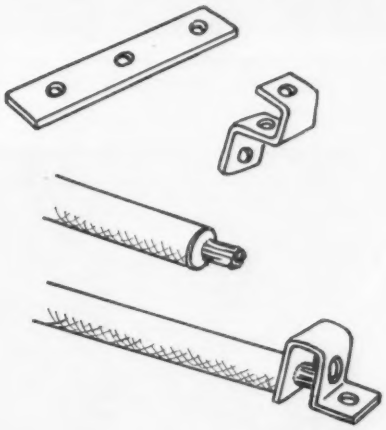
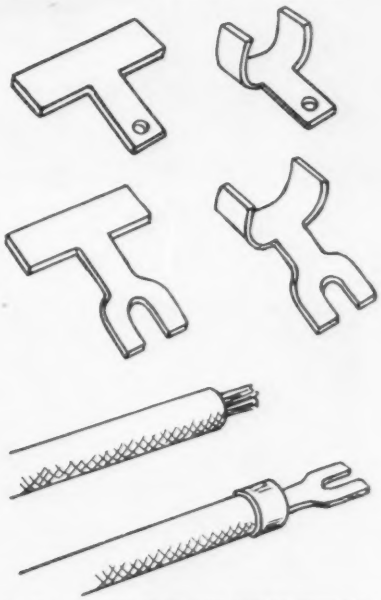
# Improvised WIRE TERMINALS

CHAS. H. WILLEY







IT IS NOT LIKELY that you will make your own wire terminals if you can purchase them ready-made at a radio or electric-supply house, but it is handy to know how should you run out on a weekend or late at night when no stores are open. The three types of terminals shown here will fit almost any situation, and all are cut from light sheet metal. Brass or copper are the best metals, as they have high conductivity and solder well, but steel can also be used when necessary. Steel often is used in the lighting circuits of automobiles. After cutting the shapes, and before bending the terminals, sand each side of them to assure a clean, bright surface for good adhesion to solder. When soldering wire connections, always use rosin-core solder, not acid core. The latter will cause eventual corrosion of the connection and put resistance in the circuit that will cause trouble, whether it is a radio or automobile wiring. Round-nose, long-reach pliers are ideal for bending the terminals to the required shapes.

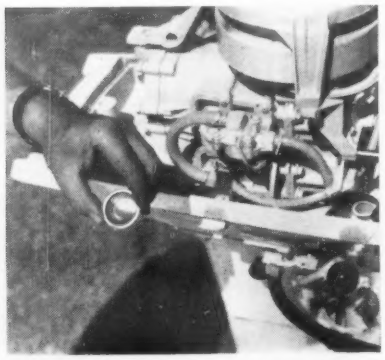
# REVIVING A DROWNED OUTBOARD

SCOTT MORGAN

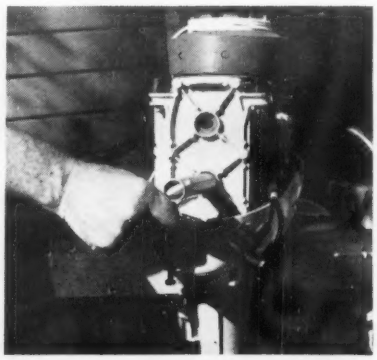
IF YOUR OUTBOARD MOTOR suddenly leaps off the transom of your boat and gurgles to a stop at the ends of the control cables, what must be done to get it going again? First step, of course, is to retrieve it. Move the boat to waist-deep water so you can stand on the lake bottom and lift with your legs. If a motor is dunked because a boat capsizes, make sure the motor is firmly clamped in place before righting the boat. If a motor is lost in deep water, mark the location with a buoy immediately. With the rescued motor in an upright position, flush the exterior with clean water, then take off the hood and remove the spark plugs, Fig. 3. Turn the flywheel by hand, Fig. 4, to determine if all parts are moving freely. Binding means internal damage and the motor should be dismantled and inspected. A motor turning at high speed when it is submerged will suck water into the cylinders and the noncompressible liquid can cause smashed pistons and bend connecting rods. If you feel grit in the motor it also means a disassembly and cleaning job. Remove the intake silencer, if so equipped, then drain the carburetor sediment bowl, Fig. 2. If the motor turns freely, purge the water from it by pulling the starter several times, Fig. 6, with the motor in an upright position. Repeat this with the motor horizontal, and plug openings facing down. With the motor upright, squirt lightweight oil into the carburetor, Fig. 5, then pull the starter cord. Repeat until nothing but oil flows from the spark-plug openings. Now clamp the motor upside down and squirt oil into the carburetor, Fig. 7, while the flywheel is rotated to coat parts in the upper end of the motor with oil. Rinse the spark plugs in white gas, Fig. 8, clean and regap them. Reassemble the motor and try to start it. If it will not start, spray the wiring with carbon tetrachloride to remove residual moisture. Failure to start now means a magneto check. If there is no inspection port, the flywheel must be removed. To avoid the last step, try using a heat lamp, or placing the motor in the hot sun to dry out the magneto.

*Photo courtesy Scott Outboard Motors*

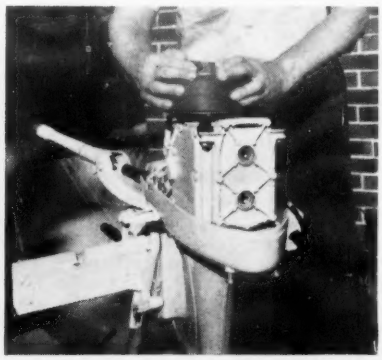
1. Loose motor clamps, a turn at excessive speed, perhaps a combination of both, has left this fellow's outboard motor dangling at the ends of the control cables. Without cables, it would be necessary to mark location with a buoy.



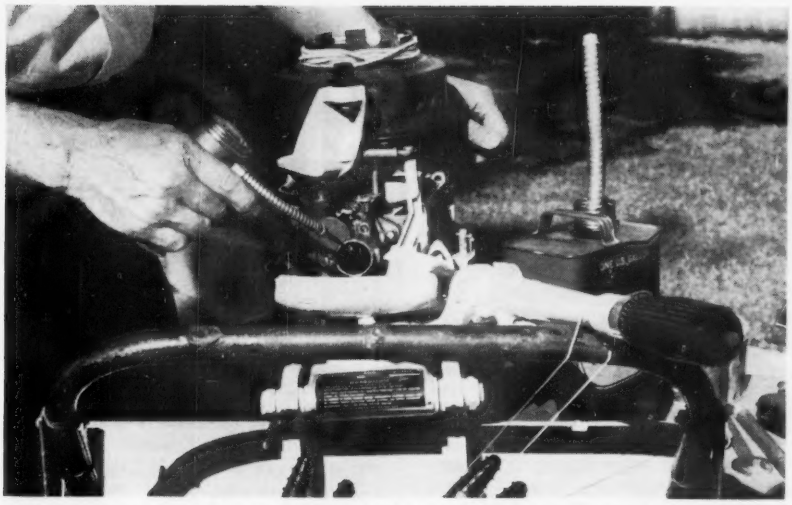
2. Sediment bowl of carburetor is removed and drained of water before attempting to start dunked outboard motor.



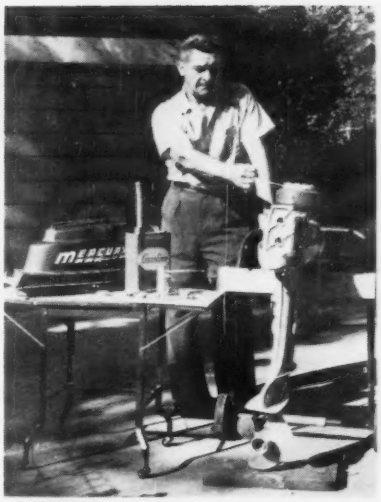
3. Removing spark plugs is necessary before turning over motor to determine if there has been any internal damage.



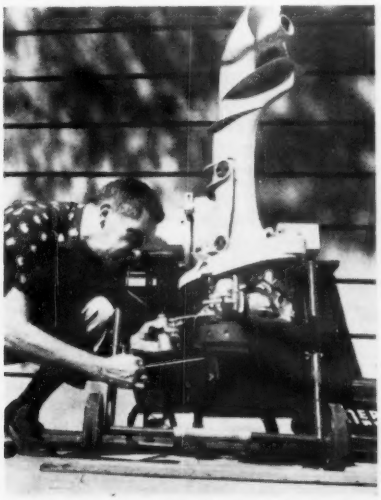
4. Flywheel is used to turn motor by hand to "feel" for damaged parts, or presence of grit inside the motor.



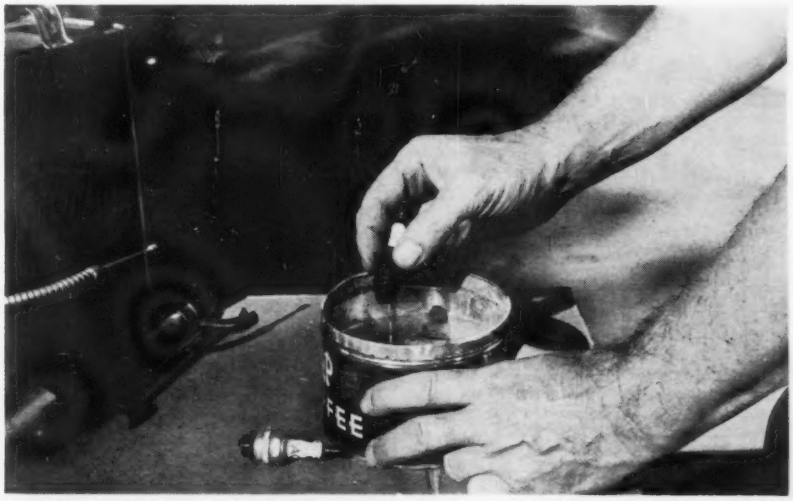
5. After purging water from motor, oil is squirted into carburetor to coat parts inside with protective film. Hold throttle and choke valves open so oil is forced inside engine. Pump-type oiler should be used for this job. Be generous with the oil.



6. After oil is squirted into carburetor, motor is turned with starter cord until only pure oil flows from spark-plug holes.



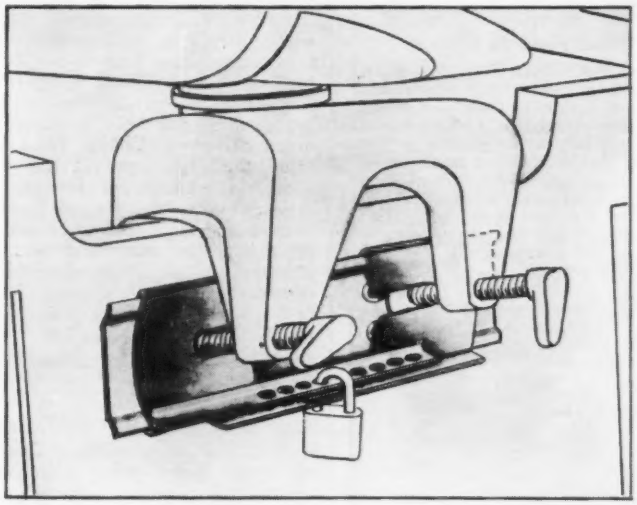
7. Motor then is clamped in inverted position and oil squirted in carburetor.



8. Spark plugs removed from "drowned" motor are rinsed in white gasoline, cleaned and regapped to specifications. Also wipe body and porcelain of plug with dry cloth.

If submerged in silt-filled water, the cooling system of an outboard should be flushed according to the manufacturer's directions.

A vented fuel tank may be contaminated with water when a boat capsizes, and the tank should be emptied and flushed with clean gasoline before it is used. A safety chain, or device such as in Fig. 9, will prevent losing an outboard motor. △ △



9. Homemade chain and lock, or device such as "Davy Jones Locker" shown here, available from Williams and Scott Co., Box 7429, No. Kansas City 16, Mo., will prevent loss of motor even though clamps become loosened, or boat should capsize in deep water.

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## HI-FI GLOSSARY

AMPLIFIER—Third unit in hi-fi set; amplifies weak signal from preamp, sends it to speakers.

AM—(Amplitude Modulation) Radio broadcasting method in which power of transmitted frequency is modulated by audio frequencies.

BAFFLE—Partition in speaker enclosure for improving sounds produced.

CARTRIDGE—Device on pickup arm of phonograph that contains stylus.

COAXIAL SPEAKER — Two speakers, one mounted inside the other. One handles high frequencies, the other low frequencies.

CPS—Cycles per second.

CROSSOVER NETWORK—Circuitry that divides high and low-frequency signals in amplifier to send them to different speakers.

DAMPING — In relation to sound, eliminating vibration. Also, loudspeakers and phonograph pickups are damped to prevent them being effected by outside electrical signals and vibrations.

DECIBEL—Unit describing sound intensity. This is logarithmic measurement; increase of ten times sound intensity is described by doubling decibel power of original sound level.

DISTORTION—Your ears tell you about this; reproduced sounds are not true copy of sounds originally broadcast or recorded.

ENCLOSURE—(Speaker Enclosure) Box in which loudspeaker is mounted. Design of box is such that sound waves from rear of speaker do not interfere with sound waves from front.

EQUALIZATION — While most phonograph records now produced are equalized with RIAA curve, records produced before 1954 have various equalization curves and a switch on most tuners permits changing to match a particular curve. When phonograph records and tapes are made, low frequencies are de-emphasized, high frequencies are strengthened. Record player must then boost low frequencies and hold down high frequencies. De-emphasis of low frequencies is greatest at low end of scale, decreases as frequency increases. When point is reached where record is "flat," that is, an exact reproduction of the recorded sound, phenomena is called "turnover." Accent on higher frequencies increases as frequency rises. Equipment that reproduces sound from record is designed to "roll off" on increasing angle as sound frequencies rise.

EXPONENTIAL HORN—Loudspeaker horn, the length of which increases in exact ratio with diameter increases.

FEEDBACK—When vibrations from speaker effect record player or amplifier, it is called "acoustical feedback." In some amplifiers there is circuit that sends impulses from later stage into earlier one to control amplification; this is "electrical feedback."

FLUTTER—The pitch of sound produced by record player or tape machine "flutters" due to fluctuations of mechanisms.

FREQUENCY—Recurrence rate for definite length of time. Between 20 cps and 20,000 cps is considered normal range of audible sound.

FM (Frequency Modulation) Radiobroadcasting method in which varying frequency of sounds transmitted varies radio carrier wave.

FRONT-LOADING — Speaker enclosure designed so sound waves from front of speaker increase efficiency of the speaker.

FUNDAMENTAL RESONANCE—Any object floating in space has point at which it will start vibrating in sympathy with sound-producing source. Lowest frequency at which this phenomena occurs is called its fundamental resonance.

GAIN — Percentage of increase in magnification of electronic signal in each amplifier stage.

HEAD—Electromagnet in tape recorder that impresses lines of force on tape, or changes lines of force into electric current for reproducing sounds.

HUM—Leakage of AC current into audio section of phonograph or radio produces 60-cycle sound.

HYSTERESIS — SYNCHRONOUS MOTOR—Speed of this type motor is directly proportional to frequency of AC current that powers it.

IM—Intermodulation; distortion.

LEVEL CONTROL—Volume control. Also, control at input of amplifier that controls amount of electrical signal from program source that is fed to the amplifier.

LINEARITY—Accurate reproduction of all frequencies on a record by a phonograph.

LOADING—Increasing loudspeaker sound by better coupling with the air. Front-loading uses waves from front of speaker, rear-loading uses waves from rear.

PENTODE — Tube with five elements. More powerful than triode, but less accurate in signal magnification.

PHASE—One part of sound wave compresses air, other part rarefies it. Sounds are in phase when they compress at same time, are out of phase when one compresses while other rarefies.

PICKUP—Arm on phonograph that contains stylus (needle).

PREAMPLIFIER — Second part of hi-fi set. It magnifies weak signal from program source so amplifier then can handle it.

RESPONSE—Flat response of phonograph shows it handles all frequencies equally, as required. The greater the response curve, the poorer the sound reproduction.

SURFACE NOISE — Scratching sounds produced in phonograph due to dust or damage in record grooves.

STYLUS—Correct name for phonograph "needle," that actually has rounded point and is not needle-sharp.

TONE ARM—Arm on phonograph that contains cartridge and the stylus.

TRACKING ERROR—Phono records are cut by stylus held on straight bar, tone arm on phonograph moves in arc. Difference between two is tracking error.

TRACKING WEIGHT — Amount of pressure stylus applies on groove of record.

TRANSIENT RESPONSE—Refers to characteristics of phonograph that permit instant response to starting or stopping of recorded sound.

TRIODE—Basic amplification tube in most amplifiers, it has three elements.

TUNER—Can be first step of hi-fi set. Receives radio signals, but has neither amplifier nor loudspeakers.

TWEETER — Only high-frequency sounds are produced by this small-size speaker.

WOOFER—Usually biggest speaker, it produces only low-frequency sounds.

WOW—Speed of phono turntable or tape-recorder mechanism varies slightly, causing slow changes in pitch of sound produced; unpleasant distortion of sound.

△ △

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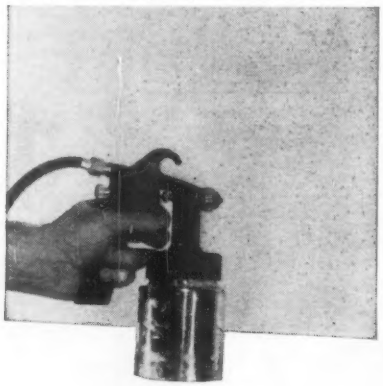
# HOME PAINT SPRAYERS

1. Regular needle and nozzle are used to spray on base coat for multi-color paint.

2. Needle and nozzle of "Sprayit 400" are changed when applying multi-color coat.



*"Sprayit 400" was sent to Model Shop by Empire Merchandising Co., "Speedy Sprayer" was sent by W. R. Brown Co.*

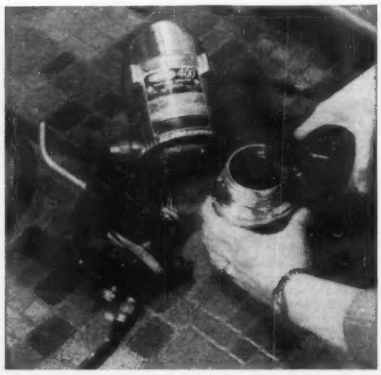
WHILE THE MAIN use for a paint sprayer is to apply paint, this certainly should not be considered its only job. To prove this point we took the "Sprayit 400" and the "Speedy Sprayer" from the Model Shop and used them for just a few of the many possible applications around a home. But, just to prevent any confusion, we did start with paint, although it is a type not often considered sprayable in a home-size unit. Most modern multi-color paints can be applied with brush, roller or spray, although some types are to be sprayed only. The Vari-Krom paint we used, Figs. 1 and 2, has a water vehicle, which means that it can be thinned with water and the spray gun and equipment cleaned with water. We did spray solvent through the gun afterward to remove water that might cause rust and corrosion. As with most multi-color paints, a base coat of a compatible color is applied first, Fig. 1, then the multi-color material is applied, Fig. 2. Spray-type cans of the multi-color paint, Fig. 3, are available for touch-up jobs, or projects too small to require a spray gun.

We found the light-duty (it produces about 18 lb. pressure) Sprayit 400 ideal for such things as spraying insecticide, Fig. 4, applying wax to a floor, Fig. 5, and putting a finish coat of varnish on furniture being refinished, Fig. 6. The regular nozzle was used for all this work. With multi-color paint a different needle and nozzle are required. The advantages of the Sprayit unit are that it is lightweight and compact, requiring a minimum of storage space. The gun is almost all plastic and is light enough for even a child to handle with no fatigue, Fig. 2.

When a heavier-duty unit is required, we found the Sprayit outfit to fill the bill. (It produces about 30 lb. pressure.) Painting a basement wall, Fig. 8, required only minutes. A distinct advantage of the Speedy Sprayer is a relief valve on the compressor that relieves at a preset pressure. This feature permits the use of both a constant-bleed and a non-bleed gun. In the latter case the relief valve lifts when the gun is not being used, then closes when the gun requires pressure for spraying. An angle nozzle for the Speedy Sprayer, Fig. 7, permits painting ceilings with the gun held in a horizontal position.

Every home workshop should have a paint sprayer. In the winter it can be used for refinishing furniture, waxing floors and painting ceilings and walls. In the summer the whole yard can be sprayed with insecticide before a lawn or patio party, wading pools and toys can be inflated, window screens can be sprayed. △ △

3. Water-base Vari-Krom multi-color paint can be applied with brush, spray or roller.



4. Another job for handy home paint spray is thorough application of insecticides.

5. Applying wax to tile floors is done quickly and easily with spray gun.

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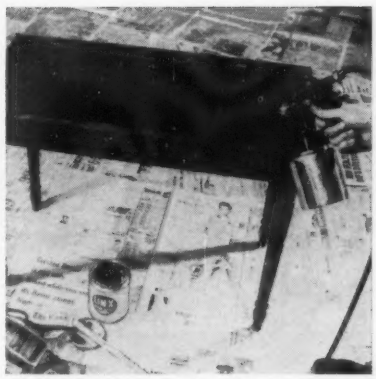

6. Spraying is finest method of applying smooth coats of varnish when finishing furniture.

7. "Speedy Sprayer" has nozzles for all types of paints, angle nozzle simplifies painting ceilings.

8. There is no faster way of painting than spray, in locations where over-spray is not a problem.


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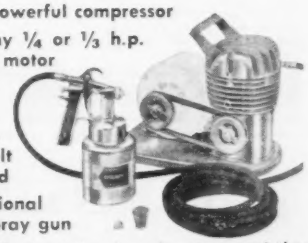

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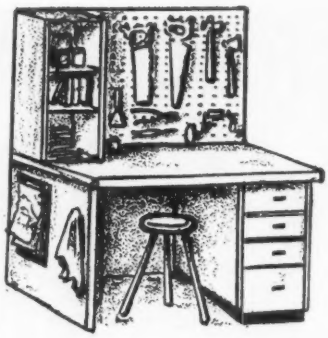


# WORKBENCH

## RESEARCH DEPARTMENT

Each issue in this column we will choose questions on home and shop subjects from letters sent to us. Only those questions which have wide appeal will be answered here. Questions on specialized subjects will be answered by individual letter from the Research Editor's desk.

Dear Research Editor:

My home is just two years old, but I am having trouble with windows. My picture window has nine lights in it, each measuring approximately 2 x 3 ft. The glass is simply set between wood strips with just a little, if any putty. Other than removing several dozen ¼- x 1-in. strips, taking out the glass and setting them in putty, then renailing the strips, how can I seal the glass so driving rains do not cause water to be forced through the frames? Also I have a small glass in the front door that leaks, installed in the same way.

J. R., Elgin, Ill.

*Dear Mr. J. R.:*

*In the matter of the 9-light window we suggest you first wait until the weather is dry for about a week, then scrape and wire-brush away any loose paint in the wooden strips around each light. Next, nail all the strips firmly in place if any are loose. Now, paint all the strips—and window frames too to assure all of them being the same color. After the paint is dried thoroughly, apply a fillet of glazing putty all around each light. Use a ¼- or ⅜-in. wood chisel when smoothing the putty so it is forced firmly into any openings between the glass and the frame strips. It will be necessary, of course, to paint the putty when it has set. The small window in the door can be sealed by removing the retaining strips on one side, then taking out the glass and applying a bed of putty all around the opening. The glass then is pressed firmly into the putty so it is forced up and out the opposite side where it later can be cleaned off when the job is done. A thin strip of putty now is applied between the glass and the opening, then the retaining strips are pressed firmly into place so the putty again is forced up and out to assure a tight seal. Finally, the retaining strips are nailed back in place.*

Dear Research Editor:

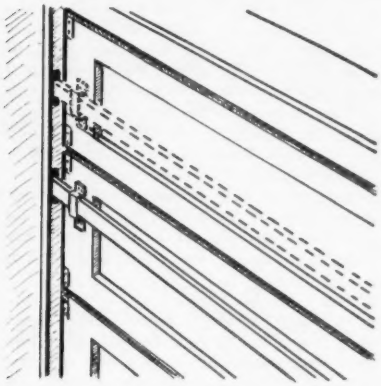
I have an overhead garage door and I would like to be able to open it a little way in order to provide ventilation, yet be able to lock it so that children and intruders could not get in. Is there some simple way that this can be done?

Mrs. D. W., Glens Falls, N. Y.

*Dear Mrs. D. W.:*

*There is a very simple way to do what you wish, and we are surprised that makers of overhead garage doors have not incorporated it in their finished product. Your door rolls on and is held by a track on each side. When the door is closed and you lock it, a bar from the handle slides in place in this track, sometimes on both sides, sometimes on one side only. To provide a lock point up from this, first open the door to the point where you wish to lock it. Then turn the handle to lock and mark the spot on the side track where the locking bar hits the track. Mark this point on both side tracks if you have a double locking bar. Then open the door to provide working room. Drill a series of holes in the*

*side track at the marked point, cut the rest of the material out with a hacksaw blade, and finish with a file to smooth the edges. The job is done. The idea you have intrigued us and we did it on our garage door.*



Research Department:

Although I have weatherstripped our back door, it still rattles whenever there is a fairly strong wind. Is there some way of tightening the latch to stop this?

Mr. L. C., Tenn.

*Dear Mr. L. C.:*

*Quite likely your problem is due to the wearing of the strike plate so that there is excessive clearance between the face of the latch and the edge of the plate. A quick way of correcting this problem is to push the door firmly closed against the stops, then pull it out so the latch bears against the strike plate. You can quite closely estimate the amount of slack in this manner. The next step then is to take the screws out of the strike plate and fill the screw holes with wood putty. Reinstall the loose door latch strike plate, locating it toward the door stop the amount you judge the slack to be. It may be necessary to chisel out the mortise behind the plate into which the latch fits. Try the door by closing it. If the latch fits a little tightly, let it go for a few days to see if the compressing or give of the weatherstripping permits the latch to fit more loosely. If after several days the latch still fits tightly, lightly file the edge of the opening in the strike plate to provide more clearance between it and the latch.*

Dear Research Dept.:

I am a young man 60 years old, live alone, have a complete workshop, and fix anything for kids from making a birdhouse, repairing a bicycle to putting half soles on a little girl's shoes! But I will be chawed at by rats, pecked at by buzzards, and everlastingly cursed if I know what size hole to bore in a birdhouse for say a wren or martin or any other kind of bird. Could you give me this information?

Mr. B. M. E., Seymour, Ind.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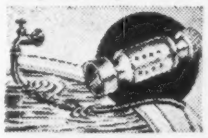

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The wiring in your home spreads out in every direction and can be put to work for you. These wires in your home pick up radio and TV signals from all directions in the same manner that radar picks up signals from thousands of miles away, it makes a wonderful TV booster.

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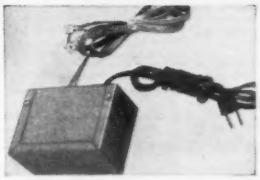

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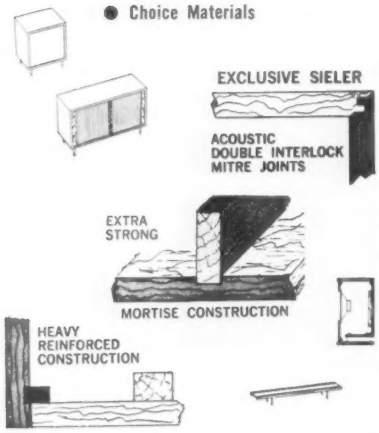


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*Dear Mr. B. M. E.:*

*If we can keep the buzzards, the rats, and the everlasting curse from you, we'll sure do our best! And, incidentally, the birds may like your efforts, too. Each of five different encyclopaedia experts came up with different size holes for the same birds, so we went one step farther: the Audubon Society. They say a wren house should have a 1-in. hole 6 in. above the floor, a martin entrance hole is 2½-in. diameter near the bottom of the compartment. Your best bet is to write to National Audubon Soc., 1130 Fifth Avenue, N. Y. 28, and ask for a copy of their free booklet: "Birdhouses and Feeders." It not only tells hole sizes, but suggests best sizes for the birdhouse, too.*

Dear Research Dept.:

Our home is only a year old and already several of the slabs in our concrete sidewalk are settling. Not only do they look unsightly, but they are a hazard to guests and others using the sidewalk. Why should this happen so soon and what can we do to correct the condition? Must we remove the slabs and repour them?
Mr. R. D. A., Cheyenne, Wyo.

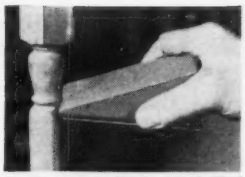
*Dear Mr. R. D. A.:*

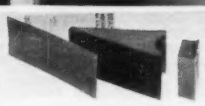
*You are entering one of the phases of new home ownership that are not publicized. This is the phase where a problem develops shortly after the guarantee is up and you, as the owner, stand the cost of fixing the trouble. Your problem should prove neither too costly nor much work to fix. What has happened is that the backfill around the house has settled and the weight of the concrete slab has carried it down to solid ground. When it's fixed now, it shouldn't happen again. What you must do is to pry the slab up—higher than it should be to allow for earth compaction—pack dirt or stones under it, and let it back down. To pry up such a heavy weight, get a long—10 or 12 ft.—clear-grained 4x4 or pole to use as your lever. Dig out under the side of the bad slab in order to get a firm purchase with the end of the pole, lay several heavy planks for the pole to rest on about 2 ft. back from the end of the pole. Have a heavy helper bear down on the end of the pole to raise the slab. You may have to take several bites on it to get it high enough. To do this, lift the slab as high as you can, then block up under it to hold it. Go through this again after putting more blocks under the pole fulcrum point. A word of caution: be very careful not to, at any time, get your hands or any other part of your body under the slab! Use a stick or shovel to poke material under the slab. When it has been raised to the proper level—plus a little higher to allow for settling, pack in dirt tightly, remove blocks, replace sod, if any has been removed, and the job is done. It is seldom that an uneven slab must be removed and repoured. Generally it can be evened up as suggested. If this problem should occur in a driveway, the procedure varies somewhat due to the additional weight of the larger slab. Here, rather than a pry pole, a hole is dug along the side to allow a house jack to fit under the edge. Lifting is done with the jack, but filling under the slab is the same as for a walk.*

**"Benedict Arnold!"**

# NEW!

## WEDGE-SHAPED HAND SANDER





Sanzall-Sander has **3 work sides** for more usable sanding surface.

Wedge shape makes it easy to reach difficult corners and crevices from any position. Compact design in rigid plastic fits snugly in palm of hand. Rubber cushioned back assures gentle-action sanding. Removable end panel grips the paper tightly, slides out for quick refills. Hollow form provides handy storage space for extra rolls. A 9" x 11" sheet of sandpaper makes 4 equal refills.

PRICE: $1.00 postpaid, includes 2 refills.

Money back guarantee. No C.O.D.'s.

**MID-WEST ABRASIVE CO.**

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## MY SPARE TIME HOBBY MAKES ME $5.00 an hour CASH PROFIT

*— Grover Squires*

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You can turn your spare time into Big Cash Profits with your own **COMPLETE SHARPENING SHOP** . . . Grind saws, knives, scissors, skates, lawn mower blades . . . all cutting edges. Your Own Cash Business with no inventory right at home . . . no experience needed. **FREE BOOK** tells how you can start your own spare time business while you are still working at your regular job. Low Cost — time payments only $15.00 a month. **Send postcard today.**

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## Makes painting EASIER

Paint or enamel goes on smoothly, spreads without streaking, when you prepare the surface with WIL-BOND . . . Applied with a rag, this unique liquid removes dirt and grease, and dulls the old finish so new paint bonds perfectly.

At paint and hardware stores. **Send 25c for Refinishing Manual** or write for free Wil-Bond folder.

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CLEANS · DULLS
no sandpapering needed

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Indoors or out these fountains can be used to decorate and beautify. Shell-shaped basin, dolphins and ornaments are cast aluminum with antique gold leaf finish in fountain above. Gray-veined white marble panel. Electric pump circulates water inside the fountain and the one below.

Cast aluminum finished with antique gold leaf is used for this fountain that has antique white tole basin, two planters. Palladio Interiors' Import Co., Inc., 783 Third Ave., N.Y. 17, N.Y., for more information.


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*Some make more, some less...*

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***Make BIG Money!***

With our easily operated, highly efficient Wall Washer, Charles Stelle took in $217 in first ten days. E. L. Goss took in more than $10,000 in one year. G. H. Jones wrote, *"I made a net profit of $1200 on one job."* And no wonder—this machine washes walls 6 times faster and better than by hand and with no mess—no drop cloths needed.

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***Lose No Time—Send Coupon Today for All the Facts***

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Send at once (no obligation) your **FREE** booklet containing information about your WALL WASHING MACHINE and how I can start my own permanent, profitable business.

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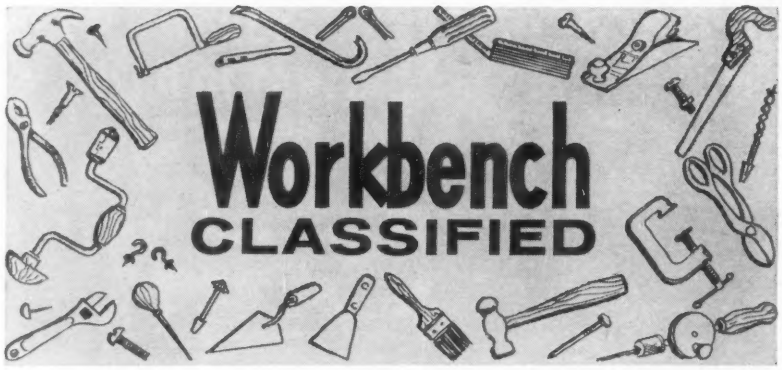


The charge for classified advertisements is 70 cents a word payable in advance by check, cash or money order. All classified set solid, without display, leaded, or blank space. All copy subject to publisher's approval. For clarity, please type or print your copy. Be sure that check, currency or money order accompanies copy. When figuring the number of words be sure to include name and address. For example: W. C. Jones, is three words. Send your copy in at once. Closing date for classified advertising is the first of the second month preceding publication. Minimum 10 words.

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CAN BE USED WITH ONE HAND!

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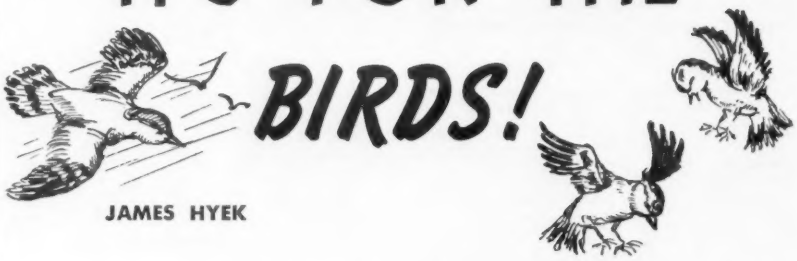

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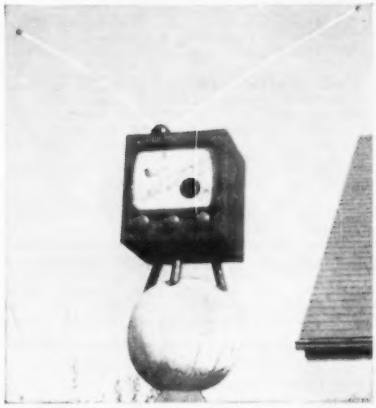
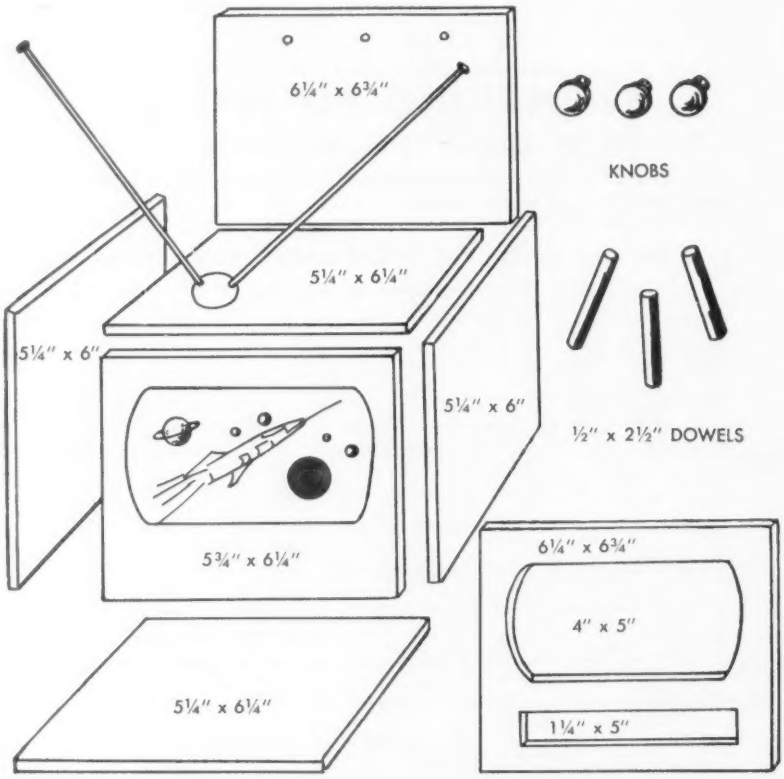
TELEVISION IS for the birds when you build this unique birdhouse. Scraps of solid stock, or 1/4 or 3/8-in. plywood can be used for the house itself, while lengths of 1/2-in. dowel are used for the legs. They are for appearance only if the house is hung from a tree, but will support the house on either a flat or round surface, such as the fence post shown. Knobs for the TV house can be salvaged from an old radio or TV set, or may be sections cut from a large-diameter dowel. The "rabbit-ears" antenna consists of a large cork ball and two plastic knitting needles. Secure the antenna well for birds will bounce on them before entering the house. The television "picture" can be cut from a magazine and coated with varnish or shellac, or simply painted on.





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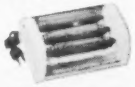
Soft pillows for your knees. Fits men, women. For gardening, scrubbing, household chores. $2.00 ppd.



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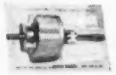

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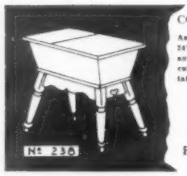


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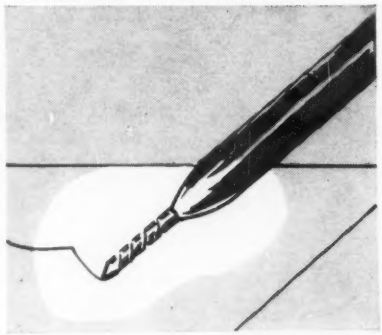


### "Automatic" Metal Scriber

As easily carried in your pocket as an automatic pencil is this metal scriber that consists of an automatic pencil in which a small drill bit is used instead of pencil lead.
*Gene Salts, Pine Lawn, Mo.*

### Need a Reamer?

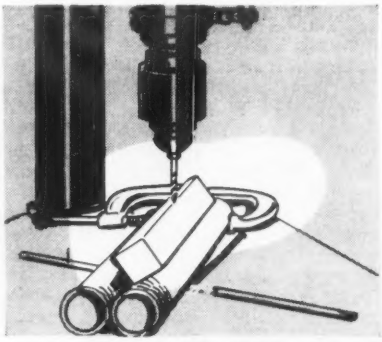
Lacking a reamer for some small holes, you can use the tang of a file. Select a file with a tang that is hexagonal in shape, for one of this type will serve the purpose best.
*John A. Comstock, Wellshore, Penn.*

### To Extract Broken Brush Handles

If the wooden handle on your floor brush breaks near the surface of the socket and the piece in the socket is difficult to extract, try driving a long wood screw into the top of the piece left in the socket. The wood in the socket can then easily be extracted by grasping the head of the screw with pliers and pulling out.
*Donald Spichuk, Brooklyn, N. Y.*

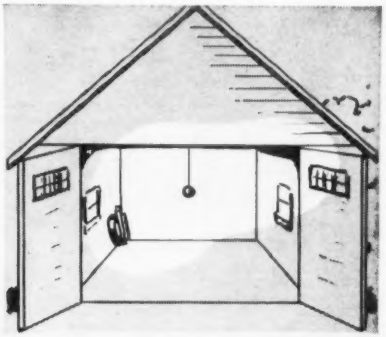
### Treat Screens to Assure Privacy

A window or door screen will seem opaque to outsiders if you paint the outside of the screen in a light color. Of course, you can see out from the inside. Use a small screen roller to avoid filling the screen mesh with paint.
*Ken Murry, Colon, Mich.*



### Improvised V-Block

When no V-block is handy, one can be improvised from two short lengths of pipe that are clamped together as indicated. For a more permanent setup, drill holes through the pipes and bolt them together.
*Edward Bentley, Jackson, Mich.*



### Ball "Measures" Garage

Parking a modern, long car in an older garage so that there is room in front, at the back, or both, sometimes presents a problem. If a ruber ball is suspended on a cord from the ceiling so it just touches the windshield when the car is positioned properly, any driver can put away the car.
*Mrs. E. C. Gardner, San Angelo, Tex.*

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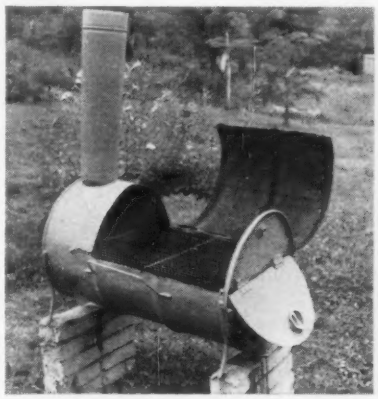
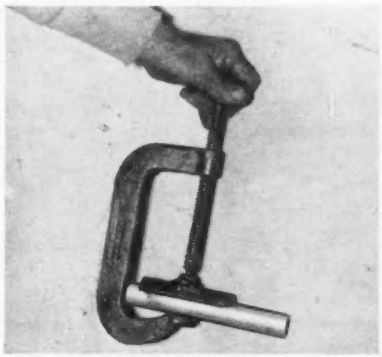
## Oil-Drum Barbecue Grill

Discarded steel drum, modified as shown, makes inexpensive barbecue grill. Half of end is cut and hinged for access to "firebox" under grill. Portion of side of drum is cut and hinged, length of stove pipe is fitted over steel ring welded in opening.
*Wayne Floyd, Fayetteville, Tenn.*



## Clamp For Rounds

Pipe and other rounds can be held firmly by clamp that has length of steel angle welded to pad on screw.
*Harry Miller, Sarasota, Fla.*



## Steel Wool Restores Suede

Light brushing with steel wool will buff up finish on suede of shoes, handbags and jackets. The wool also will remove stains and marks on leather surfaces.
*Williams Co., London, Ohio.*

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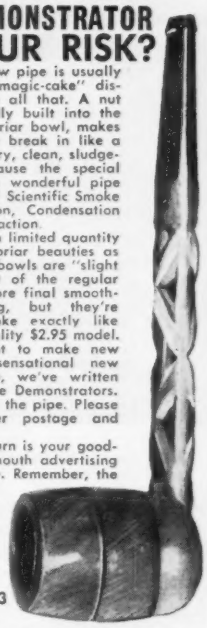
WILL YOU TEST SMOKE THIS DEMONSTRATOR AT OUR RISK?



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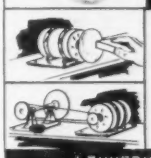

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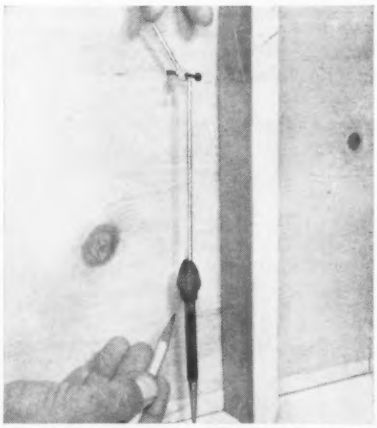
## WORKBENCH SHOP TIPS

### "Lighted" Basement Doors

When the wooden doors of an outside basement entrance need replacing, build them with a framework of 2 x 4s instead of solid planking. Cover the insides and outsides of the doors with clear-plastic material. Sunlight then will illuminate the stairs when the doors are closed.
*Wayne Floyd, Fayetteville, Tenn.*

### Improvised Plumb Bob



Serviceable plumb bob can be improvised from center punch fitted with slip-on eraser. Knotted cord is fitted in hole in eraser to suspend the bob as shown.
*Bill Toman, Palatine, Ill.*

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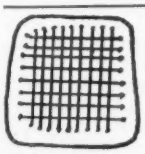

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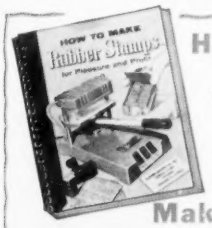


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## NEW WARNER SUCCESS PLAN

**Tells How to Build—Step by Step—to Big Profits and Personal Independence.** ***Read This Plan for Two Weeks Entirely At My Risk!***

In this amazing Plan you will find exact and detailed instructions for starting a Home Business in spare time — without giving up your present job and without risking the loss of a single pay check. The Warner Plan shows you — with pictures, photographs and drawings — just how to make Rubber Stamps just as good as those turned out by the big companies. It shows how to get orders *without canvassing or house-to-house selling.* It shows you how to expand, how to get others to work for you and how to be SURE of at least twice the money you make on your present job for a life of personal independence.

**RUBBER STAMP DIVISION**
**1512 Jarvis Ave., Dept. R-6-E, Chicago 26, Ill.**

But don't make any decision now. Read the Plan **first** — entirely at my risk. Then — after you have made a careful investigation — after you have talked things over with your family — only then do you decide what you want to do.

**ALL FACTS FREE**

The thing to do now is to get full details which I'll send you FREE no salesman will call to urge you to buy anything. Mail coupon now — or just send a postcard — and I'll see that complete information goes out to you by return mail — postpaid.

No Stamp Needed

Cut Coupon on dotted line. Fill in name and address.

Drop in Mail Box. No Stamp Needed.

YOUR NAME
ADDRESS
CITY ZONE STATE

FIRST CLASS
Permit No. 34316
Chicago, Illinois

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

Postage Will Be Paid By

**RUBBER STAMP DIVISION**
1512 Jarvis Ave. Chicago 26, Illinois

Dept. R-6-E

# BARGAINS!

## IMAGINE GETTING BANKRUPT, CLOSEOUT BUYS SUCH AS THESE!

- $1 Chlorophyl Tablets, 7½c pkg.
- 15c Textile dyes, 3½c pkg.
- $12.95 Name brand Kitchen set, $3.25.
- $49.95 Gold Bracelet, Boxed $4.75.
- POSTAL SCALES, 7½c each!
- $2.98 Horserace game records, 30c ea.
- $1.95 Men's silk ties, 12½c each!
- PENCILS, 144 for 57½c!
- 69c Insect Repellent, 5c each!
- CHRISTMAS SEALS, 25c per 1000!
- ENVELOPES, 50c per 1000!
- 35c DRESS PATTERNS, 3c each!
- Calendar Wrist Watches, $5.00 each!
- $10 Men's Toiletry Sets, 60c each!
- New Bobby Pins, 70c per 700!
- $5.50 Lucite Hairbrushes, 65c each!
- $1.75 Rudolph kids toiletry sets, 35c.
- NEW HAIRNETS, ½c each!
- $1 Automatic Card Shufflers, 9c each.
- 39c Under Arm Deodorant, 2c jar!
- 25 card asst. Xmas cards, 11c box!
- 50c Everday greeting cards, 7½c box!
- $200 Govt. Surplus Typewriters, $23.
- $1-$3 Hard covered books, 20c each!
- 49c Xmas window decorations, 10c per set.
- $49.95 7x50 Binoculars, $12.95
- 69c Insect Repellent, 5c each.
- New Phono Records, 45 & 78 RPM, 7c each.
- BUTTONS, 144 for 25c.
- CIGARETTE HOLDERS, 1c each.
- $1 Kiddies Handbags, 3c each.
- $1 Val. Billfolds, 15c each.
- $2.50 Wallets, 30c each.
- LADIES APRONS, 6¼c each.
- D.E. Razor Blades, $1.50 per 1000 blades.
- $1 Mufflers, Scarfs, 12½c each.
- Plastic Toy Guns, 2c each.
- 25c Rudolph Reindeer brooches, 2c each.
- $15 Electric Percolators, $5 each!

(Above bargain list merely illustrates type of Bargains usually found in this paper. Lists Naturally change from month to month.)

**PLUS HUNDREDS OF OTHER SENSATIONAL BUYS!**

## ONLY IN "BARGAINS" WILL YOU Find Every Month Similar—

**• BANKRUPT, CLOSEOUT, SURPLUS BARGAIN OFFERS • BARGAINS AT WHOLESALE • BELOW WHOLESALE • RARE MONEY MAKING OFFERS • New and Unusual Item Information**

**ONE issue of this SENSATIONAL Publication can make or save you MORE MONEY than the COST OF THE ENTIRE SUBSCRIPTION! This is the ONLY Big National paper of this type in circulation! You'll be AMAZED, FLABBERGASTED and DELIGHTED at the wonderful listings in every issue!**

### Look What Subscribers Are Saying!

*Here's What Subscribers say about "Bargains" After Receiving Their first copies!*

". . . Your book BARGAINS is just wonderful and I am very glad I subscribed to it." — H. K., Port Monmouth, N. J.

". . . As a result of answering one of the ads (in Bargains) it has resulted in extra profits of $40.00 and upwards per month." — J. H., Alabama.

". . . Saw your wonderful paper and enjoyed every bit of its reading and adv. It's a Great Paper." — M. S., Vermont.

". . . I am very pleased with BARGAINS. I have never seen anything like it and am looking forward to my future copies especially the Christmas edition." — Mrs. B. M., Maine.

". . . Received my first issue of Bargains and may I say it is a great magazine." — M. H. C., Alabama.

". . . I think BARGAINS is the best merchandise publication I have ever seen (And I have seen hundreds)." — S. P. C., Brooklyn, N. Y.

". . . Received my 1st copy of BARGAINS the other day and am very pleased, the information you publish may be just the 'shot in the arm' my business needs."—D. S., St. Albans, N.Y.

". . . I have found your magazine very helpful." — W. A. P., Ogdensburg, N. Y.

". . . Received your paper. Thank you very much. It is one of the finest we have ever seen." — F. D., Iowa.

". . . I was the recipient of my 1st copy a few days ago. I am completely satisfied with the periodical. I also wish to express my appreciation to you for having made the magazine available to me. I shall be pleased to continue my subscription as long as the magazine is available." — W. S., Wash.

"I have been a subscriber of your 'Bargains' magazine for nearly a year, and very much pleased with it. I wouldn't want to miss a copy of it. So I am sending in the valuable coupon you sent me with $2.00 in cash. I am so glad to be one of your subscribers." — Mrs. E. L., Richmond, Calif.

***PLUS MANY OTHERS!***

***THE ABOVE LETTERS WERE NOT SOLICITED IN ANY WAY OR MANNER—ALL ARE IN OUR OFFICE FILES! They are the enthusiastic reaction of subscribers after seeing their first copies of BARGAINS!***

**Toys, Books, Jewelry, Greeting Cards, Cosmetics, Household Merchandise, Appliances, Industrial Materials, Machinery, Tools, etc.**

### MAKE FANTASTIC PROFITS!

BUY CHEAP—SELL CHEAP! That's why thousands of smart salesmen, store owners, jobbers, etc. buy this paper! They know where to buy at CHEAPEST PRICES! NO REASON why YOU can't DO THE SAME! Many articles, features every month show you HOW to sell bargains for big profits—if you don't know how!

### SUBSCRIBERS' SHOPPING SERVICE

Enables YOU to Buy Big Name Merchandise At Tremendous Savings! "BARGAINS" negotiates bargain offers in merchandise AT LOW WHOLESALE PRICES, and then offers them to subscribers only at NO PROFIT. Permits you to buy at dealers prices! This is but ONE feature of BARGAINS!

### SAVE Up to $1000—EARN Up to $3000!

We HONESTLY think it's possible for you to do this within a year's time. For PROOF . . . see testimonial letters . . . or better still, PROVE IT FOR YOURSELF BY SUBSCRIBING.

### Bargains as low as 10¢-25¢ on the Dollar!

It's HARD to believe, but IT'S THE TRUTH! Terrific Bargains can save you 40%-80% or more on every dollar you spend!

### ONLY PAPER OF IT'S KIND AVAILABLE!

Search your newsstand high and low . . . YOU WON'T FIND ANOTHER PAPER ANYWHERE LIKE IT! "Bargains" is available by SUBSCRIPTION ONLY. It's the only paper we know in existence that actually lists Bankrupt, Closeout, Surplus offers every month. Bargains so rare and terrific, you'll blink your eyes in amazement!

### BIG 1960 CHRISTMAS ISSUES!

Your subscription will automatically include the BIG 1960 CHRISTMAS ISSUES—just in time for the big holiday season. Special issues jammed full of amazing holiday bargains. Imagine being able to buy $1.00 worth of goods at 15c, 25c or 35c.

## JUST $2.00 FOR 12 BIG ISSUES!

**Reg. Price is $3.00 per year, BUT YOU CAN STILL BUY 12 BIG ISSUES FOR $2.00! Just 18c per month! Save yourself $1.00 by subscribing now. AND SEE OUR AMAZING MONEY BACK IF NOT PLEASED OFFER BELOW! Act Fast, this offer is subject to withdrawal at ANY TIME!**

**Your Money Back IN FULL if the First Issue Doesn't Please You!**

**WHAT CAN YOU LOSE? If you are not delighted with your 1st issue, you can have your money back IN FULL! No quibbling about it either! CAN WE MAKE A MORE STRAIGHTFORWARD OFFER THAN THIS?**

**"BARGAINS", Box 591-DP, Lynn, Mass.**

**"BARGAINS"**
**Box 591-DP, Lynn, Mass.**
O.K. Here's my $2.00 for 12 BIG ISSUES. Rush me first copy! Canada $2.50, Foreign $3.00.

Name.....

Address.....

City.....State.....

Remember! Your Money Back IN FULL if the 1st issue that you receive doesn't please you!